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The relation between the intelligence and achievement of pupils grouped by parental occupations.

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THE RELATION BETWEEN THE INTELLIGENCE AND ACHIEVEMENT OF PUPILS GROUPED BY PARENTAL OCCUPATIONS

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I N T R O D U C T I O N

Do children whose parents are engaged in one occupation tend to differ from children whose parents are engaged in another? If this is true, what is the value of such knowledge? This is an attempt to determine the existence of any appreciable differences in the intelligence and achievement of children whose parents are engaged in various occupations. Since I am most familiar with pupils of junior high school age, I selected junior high school pupils for my ~~experiment.~~ investigation. Junior high school includes grades seven through nine. Because children in these grades are of an age compelled by law to attend school, this group should represent men of all occupations. Hence, the results should be accurate and valid. I shall point out by charts, tables, graphs, and discussion that differences in pupils of various parental occupations do exist and that the knowledge of such differences can be of value to both an administrator and a teacher in grading and classifying pupils, in providing suitable curricula, and in improving pupil achievement.

Studies have been made by Haggerty and Nash, Dexter, Collins, and others of the relationship of pupil intelligence and parental occupation. This study shows the similarity of conclusions drawn from tests given Louisville boys and girls

and the reported results of other investigations, and, in addition, shows the relationship between pupil achievement and parental occupation.

The children selected for the experiment were those entering the 7 B grade of the junior high schools of Louisville, Kentucky, in September, 1937. They had been given an intelligence test and an achievement test during the previous term. Because of absence from school or change of residence, not all of the 7 B children had been given both tests. My conclusions are based on the records of the 1,560 boys and girls who had been given the tests.

Chapter I

PERTINENT FINDINGS IN PREVIOUS INVESTIGATIONS

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Side by side they sit in the school room, the children of a banker, a cook, a day-laborer, and a mechanic. They hear the same teacher make the same statements to all. Does the fact that one has a father who is a big business man, another a father who works on the roads, another a father who repairs the broken parts of motor vehicles make any difference in the reaction of the child? Individually, yes, for even two of those whose fathers are bankers will be entirely unlike. But, if we group all the children whose fathers are carpenters, will we find that the average of that group will be any different from the average of any other group?

Will the children from any group of parental occupations be any more intelligent than the children from other groups? If we classify the children according to their fathers' occupations, how will these groups rank in intelligence? Will we find a larger number of boys or a larger number of girls above average in intelligence?

These are questions which have been a source of discussion for a number of years. According to Lorimer and Osborn, "The three largest surveys that have been made in this country of the intelligence of elementary school children classified according to the occupation of the fathers are: the Madison (Wisconsin) survey by Dexter, the Ohio city survey by Collins

and the New York city survey by Haggerty and Nash."[1]

Emily Dexter in 1920-1921, based her study on tests given in thirteen of the ward schools of Madison, Wisconsin. Dearborn tests were used in Grades One through Three and National Intelligence Tests in Grades Four through Eight. The children were grouped according to parental occupations. The groupings were arranged arbitrarily with subheads under each except that of unskilled labor. There were six major headings. The conclusion drawn from the study was, "that it seems safe and reasonable to conclude - whether it is intelligence that is being measured, or ability to work under controlled conditions with paper and pencil, or some other factor, - first, that there is at least an element of truth in the saying 'like Father, like son,' even though no family relationships are here under consideration; and second, that although for every calling there are individuals who rank very high as well as those who rank very low on these general tests, still the central tendencies for each group show a difference in intelligence, whether of type or of degree, it is impossible, as yet, to say."[2] Miss Dexter based her conclusions upon the testing of 2,782 students. The average I.Q. for each of the six groups and each sub-group was found. Most of the sub-divisions were of too small numbers to warrant

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1. Lorimer, Frank and Osborn, Frederick, Dynamics of Population, New York. MacMillan Co., 1934. p. 159
2. Dexter, Emily, "Relation between Occupation of Parent and Intelligence of Children," School and Society, Vol.17. June 2, 1923. p. 614

generalizations and some of them too broad to be fair. "Differentiation might be made if one could be certain from the reports given by children between expert or casual workers."[1]

During 1924-1925 an exhaustive survey of the educational system of British Columbia was made under the direction of Dr. J. H. Putnam and Dr. G. M. Weir. Both elementary and high school pupils were given intelligence and achievement tests. Because this was made at the same time Haggerty and Nash were making the above mentioned study, Putnam and Weir thought that if results could be worked up the same way as those of Haggerty and Nash, an interesting comparison might be made.

Haggerty and Nash were working with the children in New York rural schools. Eight thousand, one hundred twenty-one children were included in their study. Fifty-five occupations were listed. They believed that "the relationship of parental occupation to the opportunities afforded the offspring is a matter of deep social significance."[2] Their study bears upon the general question as to the degree that the capacity of children to profit by elementary education and secondary schools is conditioned by the occupation of the parent. The occupations were classified according to Taussig's[3] scheme for

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1. Dexter, Emily, op.cit., p.614
2. Haggerty, M.E. and Nash, Harry B., "Mental Capacity of Children and Paternal Occupation," Journal of Educational Psychology, Vol. 15. p. 559
3. Taussig, F. W., Principles of Economics, New York MacMillan Co. 1912. pp.134-148

classification. Their conclusions give that "in other words, but little more than one-fourth of the children of miners, masons, stoneworkers, laborers, farmers, bakers, and blacksmiths appear to be as able to profit by the work of the elementary school as that school is now organized as are three-fourths of the children of druggists, brokers, officials, insurance men, lawyers, teachers, office workers, doctors, dentists, accountants, bankers, and merchants. The father's occupation appears to afford a rough index of the child's intelligence, of its capacity to profit by schooling, and possibly of the type of school most serviceable to its needs. . . . It would seem to follow that the occupation of the parent has a direct relation to probable success of children in American public schools. Children of professional classes can master current curriculum with emphasis on conceptual knowledge; children of artisan classes are much less likely to succeed. That the latter are entitled to modification of present educational procedures designed to facilitate progress through schools is a possible inference from these data."[1] In this study we again find children of professional parents ranking highest in ability to achieve and those of unskilled workmen at the bottom.

Peter Sandiford states that in the study made in British Columbia the results were similar to those found by Haggerty

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1. Haggerty, M.E. and Nash, Harry B., op.cit., p. 571

and Nash. "In all cases children of professional workers head the list by a wide margin, while the general order conforms clearly to that of the army. Intellect sufficiently high to achieve success in a profession is handed down to children."[1]

Sandiford mentions that the order conformed closely to that of the army. What does he mean by that? He is referring to the comparison made between the intelligence and occupation of the men enlisted in the army of the United States during the World War. "The relationship between intelligence as measured by the Army psychological examinations and various occupational groups was a by-product of the development of the Army psychological work. The first study reported was made at Camp Dix during October, 1917. It was concerned with the relationships of intelligence, skill, wages, and nineteen occupations."[2] More studies were made of the army men. All of the men of the draft of May 25 to June 4, 1918, were given psychological examinations. The results were classified according to the men's occupations. It was seen that the median scores of the unskilled laborers was lowest. Then came the semi-skilled laborers. Next in order were those in skilled trades. Those in the technical trades were next, while the professional workers were highest of all. There were 7,550 men included in this study.

This was a study of the relationships between intelligence and occupations of the men themselves and not of parental

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1. Sandiford, Peter, "Paternal Occupation and Intelligence of Offspring" School and Society, Vol. 23, Jan. 23, 1926, pp. 118-119
2. Yerkes, Robert, Memoirs National Academy of Sciences, Government Printing Office, 1921. p. 819

occupations. It is interesting to note, however, that the relationship of the intelligence of the child and parental occupation is the same as that of the intelligence and occupation of the person tested.

The third survey that Lorimer mentions is that by Collins.[1] It is based upon conclusions drawn from data gathered from grades one to six of the public schools of an Ohio city of 45,000 population during April, 1924. The study is believed to be free from selection and to be representative of one type of American community, an industrial city. The investigation included 4,727 children. One thousand twenty-five of these were in junior and senior high schools. The Otis Primary Group test was used in grades one through four and the Otis Advanced Group test in grades five and six. The data was grouped according to nine occupational classes. On the average, the children of professional and managerial fathers were found to have a higher I.Q. than those of clerical or trade fathers, who in turn had a higher I.Q. than laboring fathers. The I.Q. of the professional, managerial, and clerical groups lay almost entirely above the general mean, while the agricultural and unskilled lay almost entirely below. The I.Q.'s of one-fifth of the professional group and of two-thirds the unskilled group lay below the mean. Collins concludes that the "occupation of the father may be a rough index to the intelligence of the child."[2]

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1. Collins, J. E. "The Intelligence of School Children and Paternal Occupation," Journal of Educational Research, Vol. ~~XVII~~ 12, March, 1928, pp. 167-169
2. Ibid. p. 169

The Psychological Laboratory of Indiana made a study of the intelligence of children ten to fourteen years old in that state. This showed a wide divergence between intelligence test scores made by children whose parents belonged to different occupational classes. The children whose parents belonged to the professional class made much higher scores than the children of parents belonging to the artisan or day laborer classes. "The percentages of the children representing various occupations who made scores above the median for the total group tested were as follows: professional, 85; business and industrial executives, 68; skilled tradesmen, 41; day laborers, 39. These figures were obtained of children ten to fourteen years old in a community where school attendance was compulsory."[1]

Book made a study of the intelligence of the high school seniors in Indiana but states that the above results "should, therefore, be more reliably indicative of the real differences which exist between the various occupational groups than the results from high school seniors because children from certain occupational classes may not attend high school at all and children from other occupational groups may not be able to graduate from high school if they did attend. The results nevertheless are significant and should be considered with the data gathered in the army."[2]

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1. Pressey and Ralston, "The Relation of Occupation to Intelligence as It Appears in the School Children of a Community," Journal Applied Psychology, Dec. 1919, p.373
2. Book, William F., The Intelligence of High School Seniors, McMillan Co., 1922. p. 371

Ruth Byrns and V.A.C.Henman at the University of Wisconsin felt that in all of the studies made comparing intelligence of children with parents' occupations too small a group had been used to make the study extremely accurate. They determined to establish the relation with a very large number. Their testing extended from 1929 to 1933, and the results were published in 1936. The data was collected in a state-wide testing program in which 100,820 high school seniors were tested. The Ohio State University Psychological Test was used in 1929, the American Council Psychological Examination in 1930 and 1931, and the Henman Nelson Test of Mental Ability in 1932 and 1933. The parental occupations were divided into nine general groups - professional, executive, business, clerical, skilled, semi-skilled, unskilled, farmer, and miscellaneous. A tenth group was made for the unemployed. This was an adaptation of Taussig's five-fold grouping. "Practically all similar studies have found children of professional parents to rank the highest and those of farmers to rank either at or near the bottom of the list. This distribution lends support to the general conclusion for children of the professional group had the highest median M.A. and children of farmers the lowest M.A. A range of twenty-six points in median between the farmer group and the professional group is more than one-fourth the range of the entire distribution and the differences in

median between other groups are also great enough to be significant."[1]

In England Duff and Thompson found that "when about 13,000 children representing practically all those over eleven and under thirteen in certain elementary and secondary schools of Northumberland were tested on Northumberland Mental Tests the average I.Q.'s of pupils from various classes varied from 121 (children of clergymen) down to 91 (hawkers' and chimney sweeps' children) and 88 (children of insane and criminals)."[2]

All of these studies have been made of all children in a class or in the same grades. They include the dull, the average, and the superior children. They show conclusively that when all children are considered, whether ten or eleven year old or whether high school seniors, there is a definite relation between the intelligence of the child and the occupation of the father.

Other studies have been made of outstanding or very superior children to determine if there is any relation between the superior children and the parental occupation. Terman conducted a study of gifted children. His purpose was to determine in what respects the typically gifted child differs from the typical child of normal mental ability. His data ~~was~~ were

1. Byrns, Ruth and Henman, V.A.C., "Parental Occupation and Mental Ability of High School Seniors," Journal of Educational Psychology, Vol. 27, April 1936. p. 288
2. Duff and Thompson, "Social and Geographical Distribution of Intelligence in Northumberland," British Journal of Psychology, Vol. 14. p. 196

collected on more than 1,400 children, each of whom ranked well within the top 1% of the unselected school population of corresponding age. Among his conclusions he finds that "the fact that in a state which justly prides itself on the equality of educational opportunity provided for its children of every class and station and impartially selected gifted group should draw so heavily from the higher occupations and so lightly from the lower, throws a heavy burden on the environment hypotheses. In spite of all our effort to equalize educational opportunity, the ten year old child of the California laborer competes for high I.Q. rank no more successfully than the laborer's son competed for the genius rank in Europe a hundred years ago."[1]

In another study of 476 unselected children Terman found there was not a single one reaching I.Q. 120 whose social class was below average. "Of the children of superior social status, about 10% reached 120 or better. The 120-140 I.Q. group was made up almost entirely of children whose parents belonged to the professional or very successful business classes. The child of a skilled laborer belongs here occasionally, the child of a common laborer very rarely indeed. At least this is true in the smaller cities of California among populations made up of native-born Americans."[2]

A group of private school pupils were tested by Walter

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1. Terman, Lewis, Genetic Studies of Genius, Stanford University Press, 1926. p. 634
2. Terman, Lewis, Measurement of Intelligence, Houghton Mifflin Company, 1916. p. 96

Dearborn and Psyche Cattell. 1,295 pupils were tested in three private schools. The lowest I.Q. found was 109. The Dearborn Intelligence Tests were used. The majority of pupils in private schools are from homes of the well to do. The poor arelargely excluded on account of tuition fees and many because of poor heredity. Here again we find the "children of high I.Q. are from professional and business executive parentage."[1]

Very interesting work is being done by the New York University's Clinic for the Social Adjustment of the Gifted, conducted by the School of Education. Parents come to the Clinic for advice on various problems concerning their children - their education, opportunities for development of special talents, problems of family relationship and behavior. In the past, from 1933-1936, 184 children have been referred to the Clinic. Of these 114 were accepted. The others were rejected because their intelligence was too low to bring them within the group with which the Clinic was working or because they lived too far to make case work possible. Seven of the children accepted had I.Q.'s testing 170 or above. "The average age of these children at time of referral is between eight and nine years. Sixty-six of them are boys and forty-eight are girls. In general, their origins and traits correspond with Terman's findings. They come from families of

1. Dearborn, Walter and Cattell, Psyche, "Intelligence and Achievement of Private School Pupils," Journal of Educational Psychology, Vol. 14. March 1930. p. 198

very superior educational and social status. Their fathers are largely professional men or the owners of independent businesses."[1]

This is not the only work being done in New York for the education of the gifted. On January 28, 1936, a school was founded jointly by the Board of Education of New York City and Teachers College, Columbia University. It was officially designated Public School 500, the Speyer School. "The unique features of Public School 500 are (1) that it is a school for exceptional children who are not mentally deficient; (2) that every pupil in the school was selected solely on mental tests; and (3) that the same pupils will be kept under experimental instruction for five years." There are fifty pupils testing at or above 130. "In the thirteen years of her study, Dr. Hollingsworth has never found a superior child who came from inferior stock. Parents of Public School 500 children belong to the professional and skilled-trade classes: they are above the average in economic status."[2]

From previous studies of entire classes of children, one would have suspected that the gifted group would be from the higher classes. These studies by Terman and Hollingsworth prove that suspicion to be well founded. What about gifted men of past years? Were they too from the higher classes?

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1. Hollingsworth, Leta S., "The Terman Classes at Public School 500," The Journal of Educational Sociology, Vol.10, p.86
2. Palmer, Gretta, "Junior Brain Trusters," Literary Digest, February 19, 1938. p. 11

Catherine Cox in determining the occupational status of fathers of 282 eminent men found 52.5% were from professional and nobility. The per cent grew less and less for groups classified according to Taussig's classification until in the group from parents who were unskilled workers there were only 1.1%.[1]

Edwin Clarke in studying 666 American Men of Letters found that 46.2% were from families who were in the professions. A lower per cent were from the mechanical, clerical, and unskilled group.[2] Cattell in studying 885 American Men of Science found the highest per cent were from parents in the professions and a lower per cent for agriculture, manufacturing, and trade.[3] Francis Galton points out how genius follows the law of organic transmission, runs in families, and is an affair of blood and breed.[4] He points out the chance that a man will be eminent if we know nothing else about him than that he is a father, brother, son, grandson, or other relation of an illustrious man. Havelock Ellis[5] in studying 1030 British Men and Women of Genius found 18.5% were from the Upper classes and 2.5% were from artisan and unskilled workmen.

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1. Cox, Catherine, Genetic Studies of Genius, Vol.II, Stanford University Press, 1926. p.43
2. Clarke, Edwin, American Men of Letters, Houghton Mifflin Co., New York, 1926. p.87
3. Cattell, J. and Cattell, Jacques, American Men of Science, Houghton Mifflin Col, New York, 1927. p.1121
4. Galton, Francis, Hereditary Genius, D.Appleton & Co., 1871. p.320
5. Ellis, Havelock, A Study of British Genius, Houghton Mifflin Co., New York, 1920. p.77

All of these findings report similar conclusions. In all of them, a definite relationship has been established between intelligence and parental occupation. In order to show this is true not only of the junior high school age child, I have reported investigations from the ten and eleven year old child to the high school senior. To strengthen and give support to the conclusions, I have shown investigations of gifted children and of renowned men and women. Later on in my study of the 7 B classes of Louisville in 1937 I intend to point out the similarity of my conclusions to all of these which have been quoted. All these studies which have been made deal with the relationship of intelligence to occupational status. I have not been able to find any previous study of the relationship of achievement to occupational status.

In studying intelligence and achievement certain questions tend to enter the mind of the investigator. Foremost among these is - is there any difference in general intelligence of boys and girls? In one classroom, the boys may answer all the questions asked. In another, the girls may do all the oral work. When a girl answers a question upon a home work assignment which a boy has failed to answer, the boy asserts that girls like to do home-work and boys do not. Are the boys just lazy or is not their mental capacity equal to that of the

girls. Thorndike,[1] Pressey,[2] Lincoln,[3] Burnham,[4] and Wreschner[5] have agreed that differences in general intellect if they do exist are not great enough to be important. That girls between the ages of nine and fifteen should tend on the average to surpass boys may be due to the fact that they mature earlier than boys.

Investigations which have been made of college freshmen give the same results. Sometimes if there are many more boys enrolled in the class than girls the boys tend to rank a trifle higher in general intelligence than the girls. But, generally, even in college the boys and girls rank about the same.

How do boys and girls compare in achievement? Book,[6] Lehman,[7] and Patterson[8] indicate that girls are superior in

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1. Thorndike, E. L., "Sex Differences in Mental Ability," Journal Educational Psychology, Vol. ~~III~~,3 p.64
2. Pressey, L. W., "Sex Differences Shown by 2544 School Children on a Scale of Intelligence", Journal of Applied Psychology, Vol. 2, Nov. 1918, p.224
3. Lincoln, E. A. Sex Differences in the Growth of American School Children, Warwick and York. p. 48
4. Burnham, W. H., "Sex Differences in Mental Ability," Educational Review, Vol. 52. November 1921. p.280
5. Wreschner, A., "New Studies and Mental Differences Between Boys and Girls," Review of Reviews, Vol. 63. July 1923. p.104
6. Book, William and Meadows, J. L. "Sex Differences in 5925 High School Seniors in 10 Psychological Tests," Journal Applied Psychology, Feb. 1928. p.72
7. Lehman, H.C. and Witty, P.A., "Some Suggestive Results Regarding Sex Differences in Attitude Toward School Work," Education, Vol. 49. p.452
8. Patterson, D. G., "Influence of Sex on Scholarship Rating," Education Administration and Supervision, Dec.1926, Vol.12. p.460

scholarship. Patterson points out, however, that this superiority is evident on old type tests where personalities are taken into consideration. He indicates that where the new achievement tests were given, the superiority was no longer very evident. Patterson's study was made in connection with the freshman class of the University of Minnesota. The boys and girls were given a general test which covered the entire work of their high school course. This might reveal entirely different results than the achievement of younger boys and girls. Frederick Lund made a study of the freshmen at Bucknell University during the year 1929-1930. He concludes that " (1) upon retesting college freshmen for subject matter covered in high school, the girls by comparison with high school grades were found to make a poorer showing than the boys. (2) 47% of the girls were in the upper quartile in high school, and only 27% were in the upper quartile on a retest. (3) the girls did better in English and Language, the boys better in Science and Mathematics whether on high school records or retest records."[1]

In another study J.D. Heilman finds that "one can be practically certain that the sex difference in spelling lies above zero and that it is in favor of the girls. That for language usage, reasoning in arithmetic, and study of nature,

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1. Lund, Frederick, "Sex Differences in Type of Educational Mastery," Journal Educational Psychology, Vol. 23, May 1932. p.324

the chance that the true differences are above zero are high but not sufficiently so to give practical certainty. It is probably safest to say that no true difference has been established."[1]

From these studies it would be safest to say there is no difference in achievement, just as there is no difference in general intelligence. We have found, however, that there is a significant correlation between socio-economic status of parent and intellectual development of children. "The strength of this relationship may be represented by a Pearson coefficient of correlation in the vicinity of .3."[2]

Summary

1. There is a definite relation between the occupation of the parent and the intellectual development of the child.

2. When occupations are classified according to Taussig's scheme of classification, the average I.Q. of children of professional parents ranks highest, those of clerical and business next, and in descending order - skilled workmen, semi-skilled workmen, and unskilled workmen.

3. In all studies the average I.Q. of children of unskilled workmen ranks lowest.

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1. Heilman, J.D., "Sex Differences in Intellectual Abilities," Journal Educational Psychology, Jan. 1933. p.47-62
2. Lorimer, op.cit. p.164

4. The parents of gifted children fall into the upper classes. Very rarely does a gifted child have semi-skilled or unskilled workmen as parents.

5. The fathers of eminent men and women show a far larger per cent from the upper classes than from the lower.

6. The general intelligence of boys and girls is about the same. Neither boys nor girls rank higher in general intelligence.

7. The achievement of boys and girls is about the same for all subjects except spelling. In that subject the girls excel.

Chapter II

RELATION BETWEEN OCCUPATION OF PARENT AND INTELLIGENCE OF CHILDREN

Chapter II

RELATION BETWEEN OCCUPATION OF PARENT AND INTELLIGENCE OF CHILDREN

Who were the children used in this study? Did the results from the intelligence tests given these children yield any different conclusions from those previously cited? Was there any conclusion that could be drawn concerning the children from different groups of parental occupations? Did the boys or the girls from each parental occupation group indicate a higher intelligence quotient?

The children to whom this study refers are the boys and girls enrolled in the 7 B classes of the nine junior high schools of Louisville, Kentucky, in September, 1937. This includes children who entered from the sixth grade of the Louisville public schools, those who entered from parochial schools within the city, and those who entered from schools outside the city. Since this study includes both intelligence and achievement, those for whom both test results were not procurable were excluded from the major portion of the study and are used later only to indicate the total numbers of parents in each occupation.

The intelligence test used was the Otis Self-Administering Test of Mental Ability for Intermediate and Higher Grades, Form A, by Arthur S. Otis, formerly Development Specialist with

the Advisory Board, General Staff, War Department. This was used because it is the test administered each year to the children of junior high school age in Louisville in order to determine their I.Q.'s. It was administered to the children previous to the time they entered junior high school; that is, during the spring term of 1937 when they were in the 6 A grade. The tests were graded by the teachers of each school in which the test was administered. There are 44 elementary schools in Louisville. All of them were tested, for they are the feeder schools of the junior high schools.

These elementary schools sent the test results to the Bureau of Research of the Board of Education of Louisville - the place from which I obtained the results. The occupation of the parent was supplied by the child upon a census card turned in to each junior high school upon admission there. This information was copied on a permanent record card kept on file in the office of each junior high school. I obtained this information by visiting each of the nine schools in turn and copying the information from each card on the 7 B file. I was able to ascertain by a comparison of the information from these cards with the test results from the bureau which children had been in Louisville schools the previous spring and which children were entering the 7 B class from other than Louisville public schools. In some cases where the child had

not supplied the information of occupation of parent, reference to the city directory gave the required information.

My classification of these occupations is based upon Taussig's scheme of classification.[1] Taussig divides occupations into five major groups, (1) professional (2) clerical and business, (3) skilled workmen, (4) semi-skilled workmen, and (5) unskilled workmen. I have separated the clerical and business into two groups instead of one. I have also added a miscellaneous or unclassified group. This means I have used seven major groups. My seventh group was used in order to determine comparisons for the entire 7 B class. The children in this seventh group are children whose parental occupations did not seem to fit into any of the six groups.

Each of the groups was divided into subgroups with the exception of that of unskilled labor. The professional group consists of lawyers, bankers, teachers, ministers, doctors, engineers (both civil and chemical), dentists, trained newspapermen, and trained business executives. The clerical workers are stenographers, bookkeepers, cashiers, accountants, mail clerks, secretaries, collectors, and shipping clerks. The business group consists of contractors, cafe and restaurant proprietors, salesmen, merchants, insurance and real estate men, butchers, farmers, lumbermen, and managers of companies. The skilled

1. Taussig, F. W. Principles of Economics. p. 63

workers are inspectors, foreman, paper hangers, printers, electricians, metal workers, railroad men, bakers, blacksmiths, barbers, painters, tailors, plumbers, carpenters, mechanics, masons, etc. The semi-skilled group consists of street car motormen, policemen, firemen, janitors, mail carriers, truck drivers, watchmen, etc. The unskilled workers are those who work by manual labor alone (such as the ditch digger). The last group,(the miscellaneous), are the W.P.A. workers, housekeepers, retired men, pensioned men, keepers of rooming houses, the unemployed, and the orphaned children.

The following tables show the range of I.Q. for occupations included in each group and the average for each of these occupations.

I. Professional

	Range	Cases	Average I.Q.
Lawyers	86-127	9	112
Bankers	103-135	11	115
Teachers	84-130	10	107
Ministers	79-133	7	96
Doctors	103-134	7	118
Engineers	102-125	17	115
Dentists	94-113	3	101
Newspapermen	92-128	8	115
Business Executives	102-129	19	119
Miscellaneous	99-135	12	115
		Total 103 cases	

CHART I. Range and Average I.Q. of Children of the Professional Group

II. Clerical

	Range	Cases	Average I.Q.
Stenographers	80-137	7	113
Bookkeepers	92-121	5	107
Mail Clerks	86-123	8	113
Clerks	80-127	97	103
Miscellaneous	103-124	6	110

Total 123 cases

CHART 2. Range and Average I.Q. of Children of the Clerical Group

III. Business

	Range	Cases	Average I.Q.
Contractors	69-112	12	95
Cafe Proprietors	84-117	11	102
Salesmen	55-130	96	104
Merchants	70-135	72	105
Insurance & Real Estate	68-129	23	104
Butchers	71-127	7	99
Farmers	73-73	1	73
Lumbermen	92-116	6	105
Managers	81-130	61	112
Miscellaneous	67-128	28	99

Total 317 cases

CHART 3. The Range and Average I.Q. of Children of the Business Group

IV. Skilled

	Range	Cases	Average I.Q.
Inspectors	72-125	11	105
Foremen	65-123	26	92
Paper Hangers	72-124	17	98
Printers	81-118	16	104
Electricians	63-126	16	101
Metal Workers	68-122	40	96
Railroad Men	65-105	25	85
Bakers	62-118	8	93
Blacksmiths	76-108	7	96
Barbers	91-126	13	104
Painters	75-123	44	96
Tailors	84-117	3	94
Plumbers	74-112	12	93
Carpenters	67-117	57	88
Mechanics	64-131	64	96
Masons	67-110	12	89
School, Office, Engineers	62-99	12	88
Milkmen	89-127	7	105
Miscellaneous	65-126	69	105

Total 459 cases

CHART 4. The Range and Average I.Q. of Children of the Skilled Group

V. Semi-Skilled

	Range	Cases	Average I.Q.
Street Car Motormen	61-120	25	92
Policemen	79-117	12	101
Firemen	66-115	18	95
Janitors	66-118	25	95
Mail Carriers	73-120	8	101
Truck Drivers	60-120	53	95
Watchmen	64-103	17	85
Laborers, Coopers, etc.	56-135	112	97
Miscellaneous	62-129	49	94
		Total 319	cases

CHART 5. The Range and Average I.Q. of Children of the Semi-Skilled Group

VI. Unskilled	59-110	98	85

CHART 6. The Range and Average I.Q. of Children of the Unskilled Group

VII. Miscellaneous

	Range	Cases	Average I.Q.
W.P.A.	66-126	10	93
Orphanages	57-107	10	87
Retired	100-126	7	110
Pensioned	84-84	1	84
Keeper of Rooming House	84-107	7	94
Unemployed	67-121	36	91
Housekeepers	62-129	39	94
		Total 140	cases

CHART 7. The Range and Average I.Q. of Children of the Miscellaneous Group

It is interesting to note the wide range of I.Q. for the various occupations included in each group. There are low as well as high I.Q.'s in each group. The lowest I.Q. in the professional group is 79; the lowest of the clerical, 80; the lowest of the business, 55; the lowest of the skilled, 62; the lowest of the semi-skilled, 56; the lowest of the unskilled, 59; and the lowest of the miscellaneous; 57. The highest I.Q.'s are professional, 135; clerical, 137; business; 135; skilled, 131; semi-skilled, 135; unskilled, 110; miscellaneous, 129. This means there is wide overlapping among the groups.

Since there is such a wide overlapping among the groups, perhaps the average of each occupation in the various groups will present a better picture than the individual I.Q. In the professional group the average of all occupations except one are above 100. The same high averages are true of the clerical group. In this group, all of the averages are above 100. To be exact, in the professional group there are nine above 100 and one below. In the clerical group the entire five averages are above 100. In the business group six are above 100 and four below. Of the skilled workmen six are above 100 and thirteen below. Of the semi-skilled workmen two of the averages are above 100 and seven below. The average of

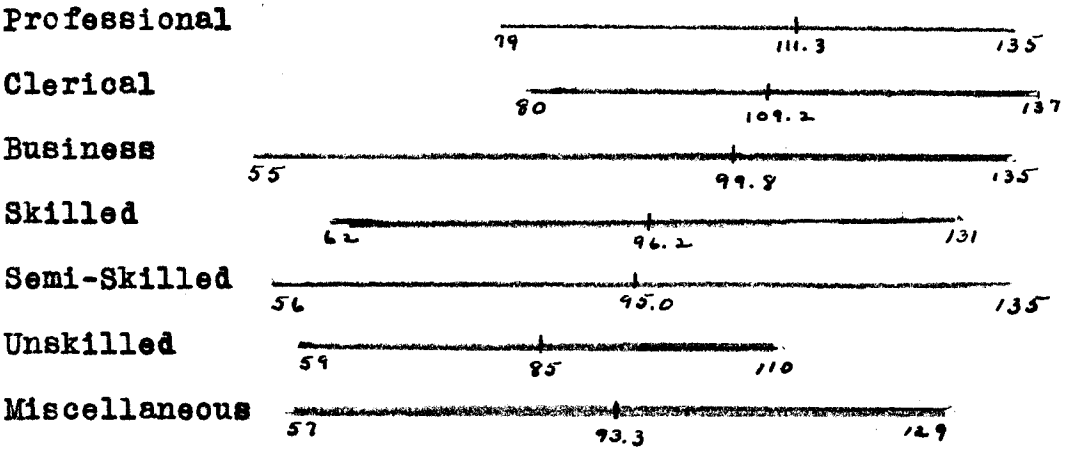
the unskilled workers is below 100. In the miscellaneous group one is above 100 and six below. The highest average in the professional group is 119, with a second high of 118. The highest of the clerical group is 113. In the business group the highest is 112. Of the skilled workmen the highest is 105. The semi-skilled group has a highest of 101. The average of the unskilled workmen is 85. It is interesting, too, to note that in the miscellaneous group the highest average, 110, is for the retired group.

A close scrutiny would indicate that the professional and clerical groups contain more high averages than the other groups. In the business, the skilled, semi-skilled, and unskilled groups there are fewer averages which are high. The fewest high averages lie in the group of unskilled labor.

The average I.Q. for each entire group is as follows:

I.	Professional	111.3
II.	Clerical	109.2
III.	Business	99.8
IV.	Skilled	96.2
V.	Semi-Skilled	95.0
VI.	Unskilled	85
VII.	Miscellaneous	93.3

The following graph shows the range of I.Q. for each group and the average I.Q. for each group.



GRAPH 1. Occupational Intelligence Ratings. Length of Bar Shows Range of I.Q. for Each Group. The Average for Each Group is Shown by a Crossline

From the following table given by Lorimer and Osborn,[1] we can see how Louisville compares with other surveys.

TABLE I
A Comparison of the Average I.Q. of Louisville Children with those of Other Studies

Main Occupational Group	Madison	Ohio city	New York village	Louisville
Professional	115	115	116	111.3
Business, Clerical	105	110	107	109.2
Skilled and Semi-Skilled	95	92	97	95.6
Farmers	-	-	94	-
Unskilled	89	94	95	85

1. Lorimer, F. and Osborn, F., Dynamics of Population, p.160

Perhaps it would be wise to note before making a thorough comparison of Table I that not all of the tests given to calculate the I.Q.'s were the same. Different tests give results which differ by a few I.Q. points. "The fact that this variation exists is very apparent and needs no further demonstration or elaboration. On the basis of this variation some have questioned the value of group tests as a means of classification of pupils. This variation gives no grounds for the skepticism in regard to their value as instruments for classification. The variation does set a practical problem for the users of group tests, the problem of equating the I.Q.'s on the various tests."[1] Miller equated I.Q.'s obtained from nine group tests. I.Q.'s from Terman A, Dearborn II C, and Otis Self-Administering A give distribution of the group most like Stanford-Binet distribution. In the table, the Madison results were obtained from the Dearborn A for Grades II-III and the National Intelligence Test for Grades IV-VIII, the results for the Ohio city test were from Otis primary Grades I-IV and the Otis advanced Grades V-VI, the results from the New York City villages were from Haggerty, Delta 2 for Grades III-VIII. The test used here was the Otis Intermediate.

In order to determine where the percentages for each

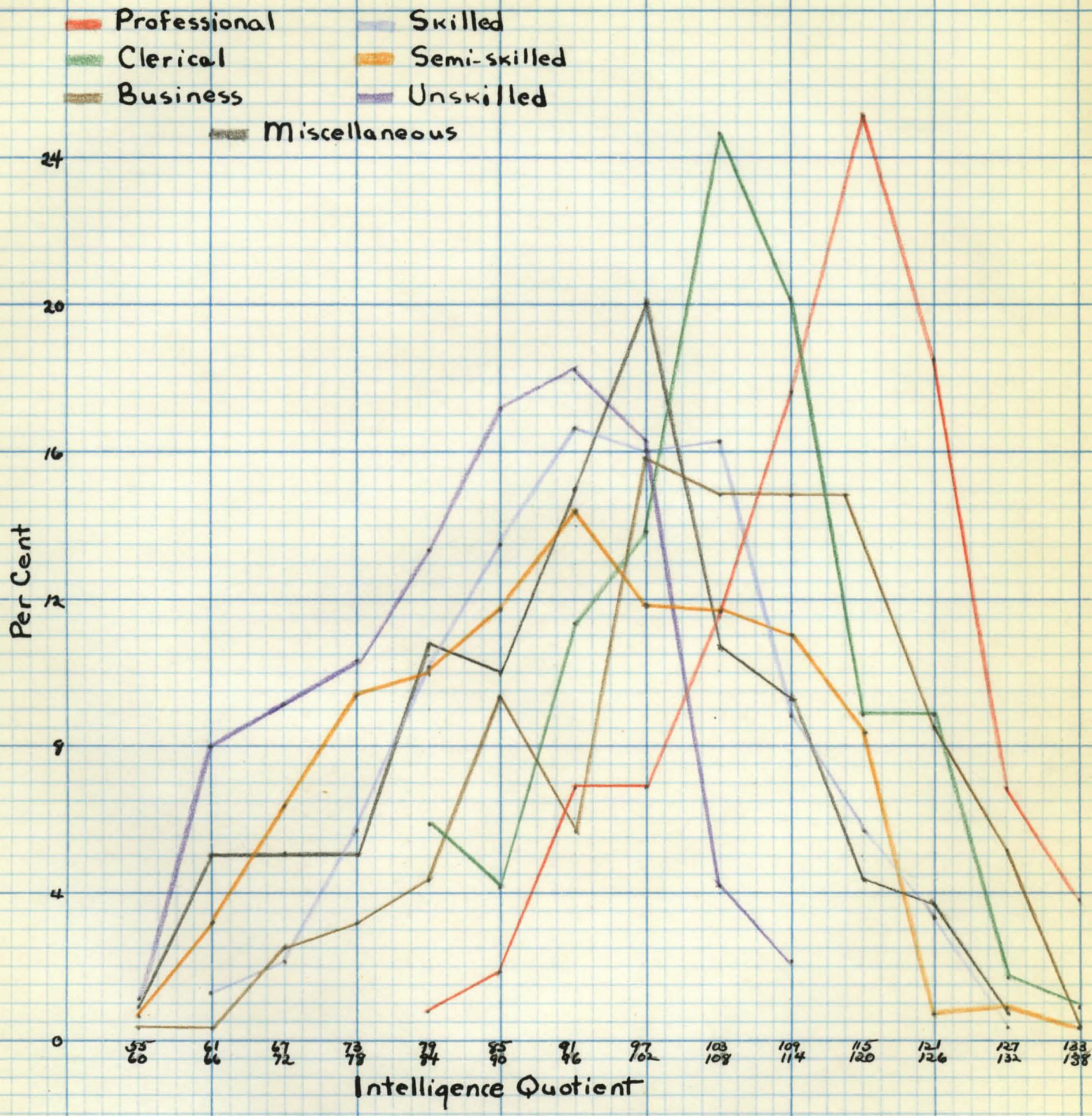
1. Miller, W. S., "The Variation and Significance of Intelligence Quotients Obtained from Group Tests," Journal of Educational Psychology, Vol. 15. pp. 359-360

group fall, I have prepared Table II, formed by taking the I.Q.'s for the various classes, arranging them from low to high in step intervals of six. The frequency for each step interval was found. From these frequencies the percentages were calculated. The percentages for each group were totaled and checked to be sure that the entire group was cared for and there was no loss or gain in percentage.

TABLE II

Intelligence Test Results Showing Percents for Various Step Intervals from 55 to 138 I.Q.

	Unskilled	Semi-Skilled	Skilled	Business	Clerical	Professional	Misc.
133-138		6%		3%	8%	9%	
127-132		9%	4%	5.1%	1.6%	1.9%	7%
121-126		6%	3.3%	8.5%	8.9%	6.8%	3.6%
115-120		8.3%	5.7%	14.9%	8.9%	6.8%	4.3%
109-114	2.1%	11.0%	8.8%	14.9%	20.2%	11.7%	9.3%
103-108	4.1%	11.6%	16.2%	14.9%	24.7%	17.6%	10.7%
97-102	16.3%	11.9%	16.0%	15.8%	13.8%	25.1%	20.0%
91-96	18.3%	14.4%	16.7%	5.7%	11.4%	18.5%	15.0%
85-90	17.3%	11.6%	13.5%	9.4%	4.1%	6.8%	10.0%
79-84	13.3%	10.0%	10.3%	4.3%	5.6%	3.9%	10.7%
73-78	10.3%	9.4%	5.7%	3.1%			5.0%
67-72	9.2%	6.3%	2.1%	2.5%			5.0%
61-66	8.0%	3.1%	1.3%	.3%			5.0%
55-60	1.1%	.6%		.3%			.7%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%



GRAPH 2

THE PER CENT IN 6-POINT INTERVALS OF THE I.Q.'S OF PUPILS GROUPED BY PARENTAL OCCUPATIONS

It is very interesting to note that in the lowest step interval in which any of the professional group fall, the interval 79-84, only .9% fall. In that same interval which is also the lowest for the clerical group 5.6% of the group fall. In that same step interval which is not the lowest for the other groups, we find 4.3% of the business group, 10.3% of the skilled group, 10.0% of the unskilled group and 13.3% for the unskilled group. 10.7% of the miscellaneous group fall there. The lowest interval used, that of 55-60, contains .3% of the business group, .6% of the unskilled group, 1.1% of the unskilled group, and .7% of the unclassified group.

No member of the skilled, unskilled, or miscellaneous group is in the top interval from 133-138. In that interval are 3.9% of the professional group, .8% of the clerical group, .3% of the business group and .3% of the semi-skilled group. The unskilled group does not have anyone in a step interval beyond that of 109-114. Moreover, there are only 2.1% of the unskilled group in that interval from 109-114.

If we note Terman's I.Q. classification[1]

above 140	genius or "near" genius
120-140	very superior
110-120	superior
90-110	average
80-90	dull normal
70-80	dull
below 70	feebleminded

we see that for this class from the Louisville junior high

1. Terman, Lewis, Measurement of Intelligence, Houghton Mifflin Co. p.79

schools there are no I.Q.'s above 140. Can we take this to mean there are no geniuses in this group? There are children in the very superior group and a large number of children who belong in the groups average and above. Since an I.Q. of 90 is considered average, let us total the percents of each class which fall in the step intervals beginning with 91 and see what percent of each group is average or above.

Group	% of I.Q.'s above 90
1. Professional	97.2%
2. Clerical	90.3%
3. Business	80.1%
4. Skilled	67.1%
5. Semi-skilled	59.0%
6. Unskilled	40.8%
7. Miscellaneous	63.6%

CHART 8. Percent of I.Q.'s above 90 from Each Occupational Group

We notice that from the professional class all but 2.8% are above average. There are 97.2% average or above. The percents gradually decrease for each of the other groups until there are only 40.8% of the unskilled group average or above. That means that 59.2% of the unskilled group are below average. Even with the overlapping of groups, there is a wide difference between the professional and the unskilled workers. There is not nearly as wide a difference between the professional and clerical or the professional and business groups as there is

between the clerical and unskilled, the business and unskilled, or the business or clerical and the unskilled.

Perhaps it would be worthwhile to see how these percentages compare with those of other studies. Catherine Cox[1] grouped 282 geniuses according to their parents' occupation. She found they were[1]

1. Professional and nobility	52.5%
2. Semi-professional, higher business	28.7%
3. Skilled workmen and lower business	13.1%
4. Semi-skilled	3.9%
5. Unskilled	1.1%
6. No record	.7%

In a study of nearly 1000 children whose I.Q.'s were above 140, Terman found a similar grouping of I.Q.[2]

1. Professional		31.4%
2. Semi-professional and business		50 %
(a) higher group	31.8%	
(b) lower group	18.2%	
3. Skilled		11.8%
4. Semi-skilled		6.6%
5. Common labor		.13%

1. Cox, op. cit., p.43
2. Terman, Lewis, Genetic Studies of Genius, Stanford University Press, 1926. p.63

Cattell,[1] in grouping the fathers of 885 leading men of science, found that they were

1. Professional	43.1%
2. Agricultural	21.2%
3. Manufacture and Trade	35.7%

Edwin L. Clarke[2] found that in grouping the fathers of 666 American Men of Letters, they were

1. Professional classes	49.2%
2. Commercial classes	22.7%
3. Agricultural classes	20.9%
4. Mechanical, clerical, unskilled	7.2%

All of these percentages from gifted people and gifted childrens' parents show that there was a greater ~~percent~~ per cent from the higher classes. This is very similar to my finding that the children from the higher classes have a much higher ~~percent~~ per cent above normal than those from the lower classes. Each of the quoted studies revealed the highest number of men from parents in professions and the fewest from unskilled workmen.

Next I found the standard deviation, the standard deviation of the mean, the probable error, and the standard

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1. Cattell, op. cit., p.1121
2. Clarke, op. cit., p. 635

deviation of difference.

	S. D.	S. D. M.	P. E.	rel.P.E.	S. D. D.
Professional	12.48	1.22	.82	.081	1.28
Clerical	12.54	1.11	.75	.067	1.18
Business	15.36	.87	.58	.033	.92
Skilled	13.14	.64	.43	.019	.86
Semi-skilled	15.48	.87	.58	.033	.92
Unskilled	14.24	1.42	.95	.095	1.48
Miscellaneous	15.24	1.27	.84	.07	1.34
Entire group	15.24	.41	.24	.02	

CHART 9. The Standard Deviation, Standard Deviation of the Mean, Probable Error, Reliability of the Probable Error, and Standard Deviation of Difference of the I.Q.'s of Each Occupational Group

Since the standard deviation of the difference of the mean is so small when compared with the mean of the entire group on the test, there is no significant difference. Yet when the difference is found from the standard deviation of the professional and clerical group, and the professional and business group we find a deviation of difference of 2.9 which is high enough to show there is a significant difference between groups. In the same way when the standard deviations of the business and skilled groups, and the business and unskilled groups are used to find the difference of standard deviation, we find the difference to be 2.8. Hence we may conclude that there is a significant difference in intelligence of the occupational groups studied. For 100 out of 100 cases the difference is 3, or an absolute difference. The differences

found were so close to 3 that they are significant.

In a study of this kind we can not conclude without reference to the continual question, who are the more intelligent - boys or girls. The following chart has been worked out by determining which are boys and which are girls in the ~~percents~~ per cents above normal.

	Total Cases	Total Boys	Total Girls	~~Percent~~ Per cent Boys	~~Percent~~ Per cent Girls
Professional	103	50	52	48.6%	50.5%
Clerical	123	52	58	42.1%	46.2%
Business	317	119	127	32.1%	40.5%
Skilled	459	143	165	31.2%	36.1%
Semi-skilled	319	85	103	26.7%	32.3%
Unskilled	98	14	26	14.3%	26.6%
Miscellaneous	140	45	44	32.2%	31.4%

CHART 10. ~~Percent~~ Per cent of boys and ~~percent~~ per cent of girls above average in I.Q.

This shows that the number of boys and the number of girls above average is so nearly equal and the ~~percents~~ per cents so nearly equal that we may conclude that boys and girls rank in equal numbers above average. There is not enough difference to discriminate and conclude that either is brighter. Moreover, the number of cases I used is so small that such a slight difference could not be valid. Yet my conclusion that there is no difference in general intelligence between boys and girls is the same as reported by Thorndike, Lincoln, and others.

Summary

1. There is a difference in average I.Q. for children of various occupational groups.

2. In Louisville in 1937 the average I.Q. for the 7B classes was professional, 111.3; clerical, 109.2; business, 99.8; skilled workmen, 96.2; semi-skilled workmen, 95.0; unskilled, 85; and miscellaneous, 93.3.

3. There is a wide overlapping in the range of I.Q. of the six occupational groups.

4. The lowest I.Q. in the professional and clerical groups is not as low as that of the other groups.

5. 97.2% of the children of the professional group are above 90 I.Q. as compared with 90.3% of the clerical group, 80.1% of the business group, 67.1% of the skilled group, 59.0% of the semi-skilled group, 40.8% of the unskilled, and 63.6% of the miscellaneous group.

6. The percentages agree with previous studies of gifted men and gifted children.

7. There is no difference in general intelligence between boys and girls as shown by the ~~percent~~ Per cent of boys and ~~percent~~ Per cent of girls from each occupational class having an I.Q. above 90.

8. The standard deviation of difference of the groups is large enough to make the difference between the groups significant.

Chapter III

THE RELATION BETWEEN THE ACHIEVEMENT OF CHILDREN AND THE OCCUPATION OF THEIR PARENTS

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An intelligence test may be used to obtain information concerning the ability of children to master academic work. An achievement test shows how much of the work children have mastered. Chapter II compares the ability of school children from various parental occupations. In this chapter, we shall compare their mastery of various school subjects. To do this, we shall use a standardized achievement test rather than tests constructed by a teacher. "A test constructed by a teacher does not always contain the essential items; the items are not validated as to comparative worth; the accomplishment standards are arbitrarily set up; the content is not comprehensive enough to measure fully the variations among the pupils; and interpretation of results is commonly subjective."[1] An achievement test is the best and soundest measure of subject mastery and may be used both to evaluate achievement and to improve instruction and pupil achievement.

The same children who were described in Chapter II were given the Metropolitan Achievement Test at the same time they were given the intelligence test. This test is divided into six parts (1) Reading, (2) Vocabulary, (3) Arithmetic Fundamentals, (4) Arithmetic Problems, (5) English, and (6) Spelling.

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1. Supervisor's Manual Metropolitan Achievement Tests, World Book Company, 1937. p. 7

These tests were graded also by the teachers of the school in which the test was given. The score for each section of the test was recorded separately. These results were sent to the Bureau of Research of the Board of Education from which I secured them.

I have treated the individual scores for each section of the test as though it were a test unrelated to the other sections. These scores I have grouped into the same occupational groups that I used in working with the intelligence test scores. I followed the same plan that I used for the intelligence test scores. I have classified these results by determining the frequency of the scores in step intervals of five months. The results are expressed for each test in terms of years and months. I have also computed the median of each occupational group, the Standard Deviation, the Standard Deviation of the Mean, the Probable Error, and the Standard Deviation of Difference.

The first test of the battery was a reading test. It consisted of paragraphs in which one or two words were omitted. The omitted words could be found by a careful reading of the paragraph.

Examples:

1. Betty's father made a little house for her. He made small chairs and a table to put in the _____.
2. Fred likes to play ball. Helen likes to read. They were both happy when Uncle Ned bought a book for _____ and a ball for _____.

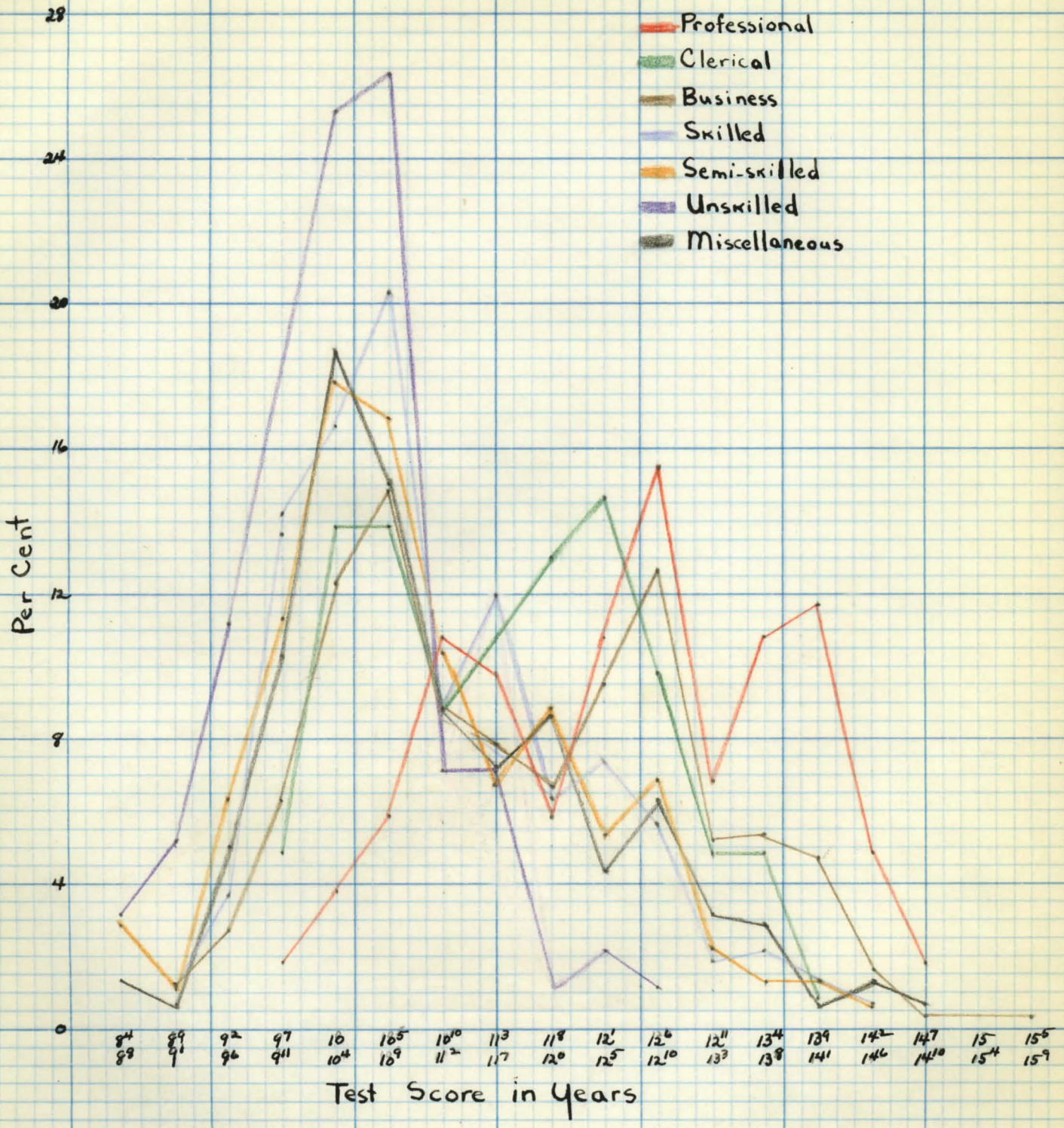
There are 64 such items in the reading test.

On the reading test the lowest step interval was 8^{4} - 8^{8}. This means 8 years, 4 months through 8 years, 8 months. No one from the professional, clerical, business, or skilled parents fell into that interval. In it are 2.8% from the semi-skilled group, 3.1% of the unskilled group, and 1.4% of the miscellaneous group. No one from the professional or business groups are in the next two intervals. In the interval 9^{7} - 9^{11} are 1.9% of the professional group and 4.9% of the clerical group. This is the lowest interval for these two groups. Where does the largest percentage of each group fall? The largest percent of the professional group is 15.5% in the interval 12^{6} - 12^{10}, the largest percent of the clerical is 14.6% which falls 12^{1} - 12^{5}, the largest percent of the business, skilled, semi-skilled, and unskilled falls in the same interval, 10^{5} - 10^{9}, and the percents in the order named are 14.9%, 20.3%, 16.8%, and 26.3%. 18.6% of the miscellaneous group are between 14^{2} and 14^{6}. The clerical group extends no higher than 13^{9} - 14^{1}, The skilled and semi-skilled goes farther than this, into the interval 14^{2} - 14^{6}. The unskilled group does not go beyond 12^{6} - 12^{10}. The business group extends into the highest interval, 15^{5} - 15^{9}, in which are .3%. The next interval to this contains no group, but 1.9% of the professional and .7% of the miscellaneous are in 14^{7} - 14^{10}.

TABLE III

Percentages of Children Grouped by Parental Occupation in Step Intervals of Six Months for Metropolitan Achievement Reading Test

	Unskilled	Semi-Skilled	Skilled	Business	Clerical	Professional	Misc.
$15^{5} - 15^{9}$				3%			
$15 - 15^{4}$				0			
$14^{7} - 14^{10}$				3%		1.9%	.7%
$14^{2} - 14^{6}$		.6%	.7%	1.6%		4.8%	1.4%
$13^{9} - 14^{1}$		1.3%	1.3%	4.7%	.8%	11.7%	.7%
$13^{4} - 13^{8}$		1.3%	2.1%	5.4%	4.9%	10.7%	2.9%
$12^{11} - 13^{3}$		2.2%	1.9%	5.1%	4.9%	6.8%	3.6%
$12^{6} - 12^{10}$	1.1%	6.9%	5.7%	12.7%	9.8%	15.5%	6.4%
$12^{1} - 12^{5}$	2.1%	5.3%	7.4%	9.5%	14.6%	10.7%	4.3%
$11^{8} - 12$	1.1%	8.8%	6.3%	6.6%	13.0%	5.8%	8.6%
$11^{3} - 11^{7}$	7.2%	6.6%	12.0%	7.9%	10.6%	9.8%	11.4%
$10^{10} - 11^{2}$	7.2%	10.4%	8.7%	8.5%	8.9%	10.7%	5.7%
$10^{5} - 10^{9}$	26.3%	16.8%	20.3%	14.9%	13.8%	5.8%	15.0%
$10 - 10^{4}$	25.3%	17.9%	16.6%	12.3%	13.8%	3.9%	18.6%
$9^{7} - 9^{11}$	10.3%	11.6%	14.2%	6.3%	4.9%	1.9%	13.6%
$9^{2} - 9^{6}$	11.2%	6.3%	3.7%	2.7%			5.0%
$8^{9} - 9^{1}$	5.1%	1.2%	1.1%	1.2%			.7%
$8^{4} - 8^{8}$	3.1%	2.8%					1.4%



GRAPH 3

THE PER CENT IN 5-MONTH INTERVALS OF READING TEST SCORES OF PUPILS GROUPED BY PARENTAL OCCUPATIONS.

Graph 3 gives a better picture of the range and extent of the scores than the table does. The step interval of the scores in years and months is along the horizontal axis and the ~~percents~~ percents of each interval are along the vertical axis. Each color represents a different occupational group. The overlapping of lines shows the overlapping of the scores.

The medians for this test are: professional, 12^{8}; clerical, 11^{7}; business, 11^{5}; skilled, 10^{9}; semi-skilled, 10^{8}; unskilled, 10^{3}; and miscellaneous, 10^{9}. Chart 11 shows how these medians compare with each other and with the extent of the scores.

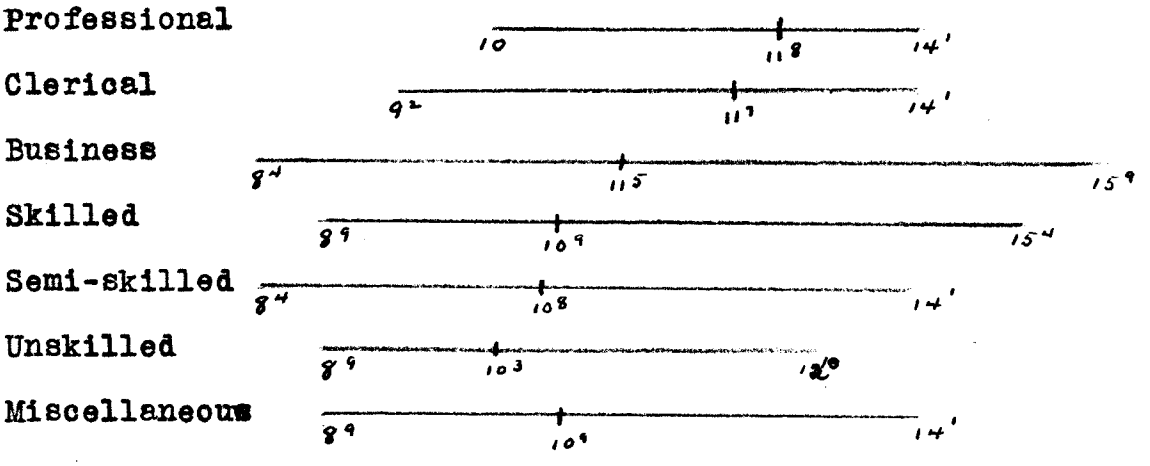


CHART 11. The Range of Scores of Pupils Grouped by Parental Occupations on the Metropolitan Reading Test. The Median is shown by the vertical line

One may observe from this how much higher the median of the professional group is than the others. There is a

decrease in median of the occupational groups until the unskilled group ranks lowest.

The following tables show the Standard Deviation, the Standard Deviation of the Mean, the Probable Error, and Difference of Deviation found between each of the Standard Deviation of the Mean of the occupational groups and the Mean of the Entire Group on the Test.

TABLE IV

Standard Deviation, Standard Deviation of the Mean, Probable Error, Standard Deviation of Difference of Scores on the Reading Test made by Pupils Grouped by Parental Occupations

Total 1560 cases	S. D.	S. D. M.	P. E.	S.D.D.M.	S.D.D.
Professional 103	14.25	1.39	.93	1.44	
Clerical 123	12.75	1.13	.76	1.19	
Business 317	16.25	.86	.57	.94	2.5
Skilled 459	12.85	.55	.37	.67	3.1
Semi-skilled 319	14.25	.80	.54	.88	3.1
Unskilled 98	9.55	.95	.64	1.03	3.0
Miscellaneous 140	15.30	1.28	.86	1.34	
Total 1560	15.05	.38	.26		

There is a difference between each group. The difference is large enough to be significant. We may conclude that children from professional parents are better readers than

children from other groups. Children from unskilled parents are poorer readers than children from other occupational groups.

Inadequate skill in reading can be due to inadequate mental ability, lack of interest in reading activities, poor informational and experience background, inadequate vocabulary, or poor general work habits. Thinking in terms of these, we would expect to find the first three groups ranking above those of skilled, semi-skilled, or unskilled labor. Perhaps we would not expect them in just the order named.

In a comparison of the ranking of the median scores of each group with the average I.Q. from each group, we see the order is the same. Their ranking in achievement is similar to their ability to achieve.

In effective teaching, the teacher can enrich the informational and experience background of children who are not likely to secure a background from home environment. From a study of the various parental occupations and the I.Q.'s of the various members of the class the teacher will know the level of difficulty of the material suitable for her class. Homogeneous grouping, such as there is in Louisville in the seventh grade, will be helpful in teaching an entire class the material suitable for it.

The second of the battery of tests was a vocabulary test, containing sixty-five items. A word was given with four

words behind it giving the meaning of the word. The child was to select the number of the word which best showed the meaning of the word given and to write the number in a parenthesis after each item.

Examples:

1. ahead means (1) below (2) in front of (3) between (4) above . . . . . ( )

2. to shield means to (1) arm (2) shift (3) conflict (4) protect . . . . . ( )

One would expect a high correlation of vocabulary scores and reading scores, for, vocabulary grows with increased extent of reading and depends only incidentally on direct instruction. The children who have achieved more in reading than the others would probably be the ones with the better vocabulary.

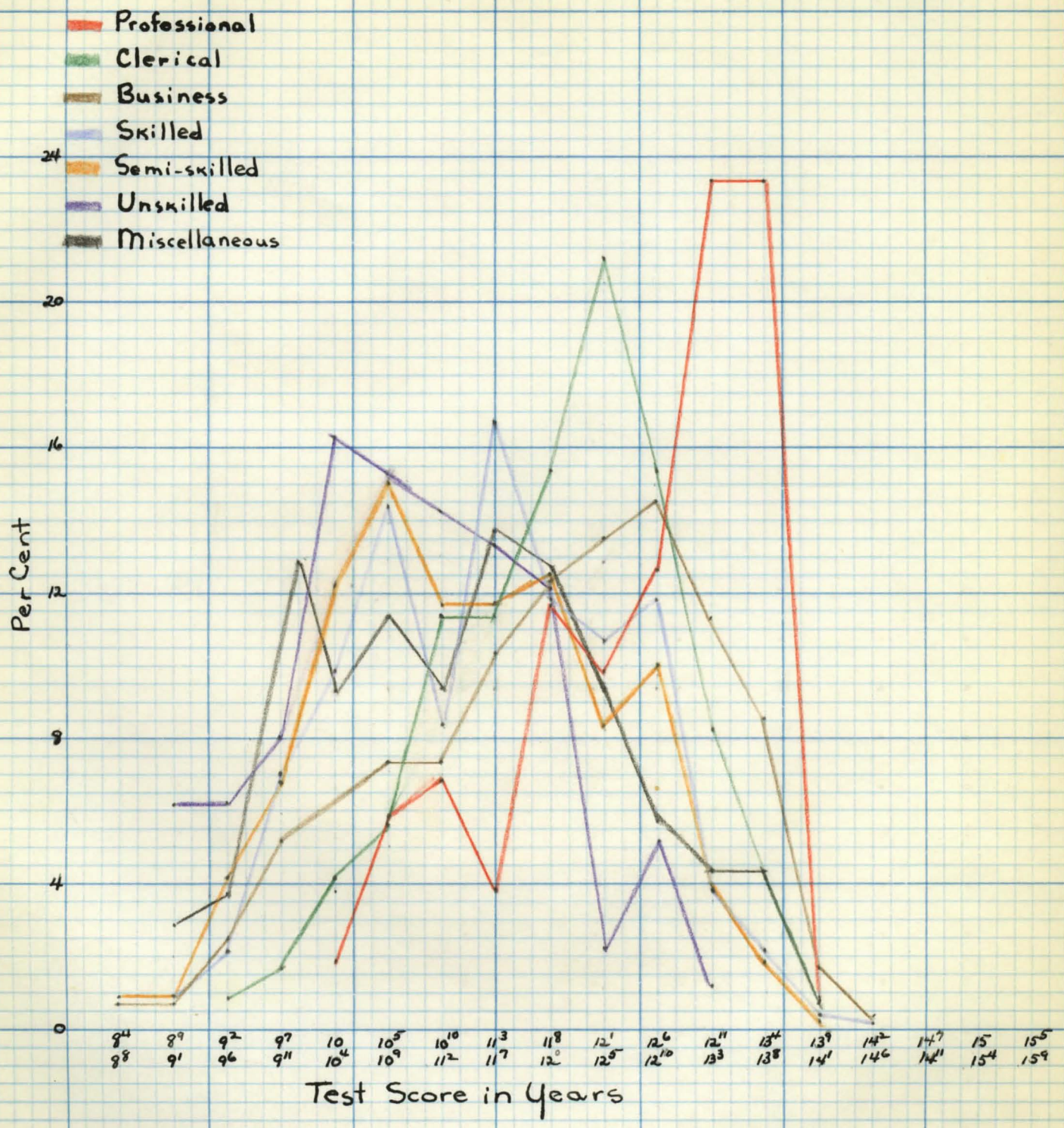
The vocabulary test shows that no children of the professional, clerical, or skilled workers fall into the lowest interval. The business group extends into the highest interval 17^{8} - 18, but only .3% are in that interval. The skilled workmen has .2% in 15 - 15^{4}. .9% of the professional, .8% of the clerical, .3% of the semi-skilled, and .7 of the miscellaneous are in 13^{9} - 14^{1} which is their highest interval. The largest ~~percent~~ per cent from each group show 23.4% in 12^{11} - 13^{3}, 21.2% of the clerical in 12^{1}-12^{5}, 14.5% of the business in 12^{6}-12^{10}, 16.6% of the skilled in 11^{3} - 11^{7}, 15% of the semi-

skilled in 10^5-10^9, 16.3% of the unskilled in 10-10^4, and 13.6% of the miscellaneous in 11^3-11^7.

TABLE V

Percentages of Pupils Grouped by Parental Occupation in Step Intervals of Six Months for Metropolitan Achievement Vocabulary Test Scores

	Unskilled	Semi-skilled	Skilled	Business	Clerical	Professional	Misc.
16^7-17^{11}				.3%			
15 -15^4			.2%				
14^7-14^{11}							
14^2-14^6			.2%	.3%			
13^9-14^1		.3%	.4%	1.6%	.8%	.9%	.7%
13^4-13^8		1.9%	2.2%	8.5%	4.1%	23.4%	4.3%
12^{11}-13^3	1.1%	3.8%	3.8%	11.4%	8.2%	23.4%	4.3%
12^6-12^{10}	5.1%	10.0%	11.7%	14.5%	15.4%	12.6%	5.7%
12^1-12^5	2.1%	8.3%	10.7%	13.5%	21.2%	9.8%	9.3%
11^8-12	12.2%	12.5%	11.7%	12.3%	15.4%	11.7%	12.9%
11^3-11^7	13.4%	11.6%	16.6%	10.4%	11.4%	3.9%	13.6%
10^{10}-11^2	14.3%	11.6%	8.3%	7.3%	11.4%	6.8%	9.3%
10^5-10^9	15.3%	15.0%	14.4%	7.3%	11.4%	5.8%	11.4%
10^0-10^4	16.3%	12.2%	9.8%	3.8%	5.6%	1.9%	9.3%
9^7-9^{11}	8.0%	6.9%	7.0%	5.1%	4.1%		12.8%
9^2-9^6	6.1%	4.1%	2.1%	2.5%	1.6%		3.6%
8^9-9^1	6.1%	.9%	.9%	.6%	.8%		2.8%
8^4-8^8		.9%		.6%			



GRAPH 5

THE PER CENT IN 5-MONTH INTERVALS OF VOCABULARY TEST SCORES OF PUPILS GROUPED BY PARENTAL OCCUPATIONS

The broken line Graph 5 similar to that of the results of the reading test, gives the range and overlapping of each group.

Chart 12 shows the median of each group on the vocabulary test compared with each other and with the range of the groups. The medians are professional, 12^{10}, clerical, 12, business, 12^{1}, skilled, 11^{4}, semi-skilled, 11^{1}, unskilled, 10^{9}, and miscellaneous, 11^{3}.

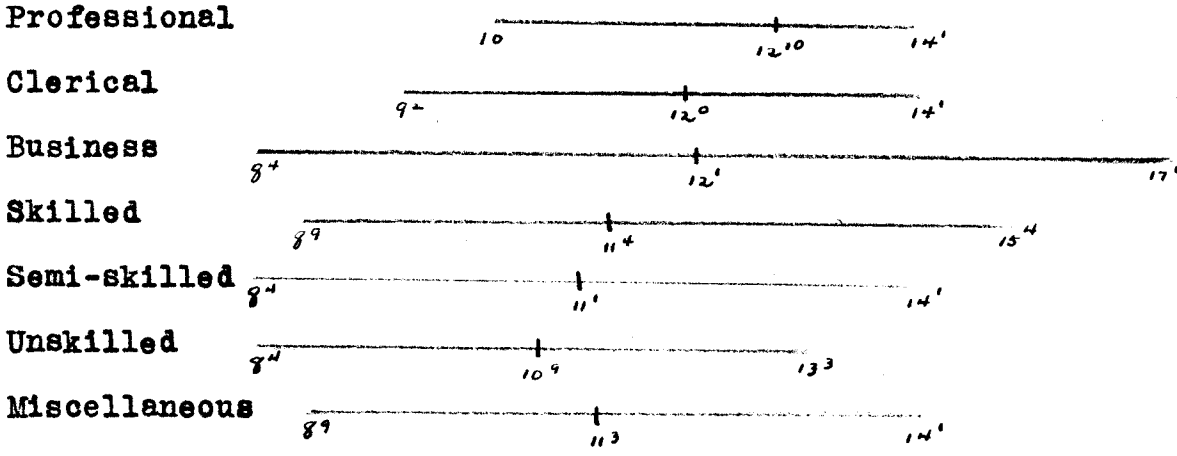


CHART 12. Range of Scores on Vocabulary Test of Children Grouped by Parental Occupations with Median Scores Represented by Vertical Lines

Table VII shows that the small difference between the S.D.M. of each group and the entire group is not significant but that the differences of standard deviations are large enough to be significant. There is a difference shown on the vocabulary test, the professional group ranking highest and the unskilled group lowest.

TABLE VII

The Standard Deviation, Standard Deviation of the Mean, Probable Error, Standard Deviation of Difference of the Mean and Standard Deviation of Difference of Vocabulary Test Scores of Pupils Grouped by Parental Occupations

	S. D.	S. D. M.	P. E.	S.D.D.M.	S.D.D.
Professional	11.45	1.12	.75	1.19	
Clerical	10.95	.96	.65	1.04	
Business	14.25	.80	.54	.89	2.8
Skilled	12.70	.57	.38	.69	2.3
Semi-skilled	13.20	.74	.50	.84	2.1
Unskilled	12.05	1.20	.60	1.26	
Miscellaneous	16.85	1.40	.95	1.46	
Total	15.25	.39	.27		

As was hinted before, these conclusions are to be expected since vocabulary and reading are so interwoven. With increased skill in reading there should be an increase in vocabulary. Suggestions for improvement in reading have been given. There are many books which are entirely devoted to methods of improvement of reading. Some of these are by E. A. Betts, A. I. Gates, C. T. Gray, M. Monroe, and N. B. Smith.

The third in the battery of tests is on Arithmetic Fundamentals. This should not be so related to reading and

vocabulary. Perhaps here we may find a different ranking of the occupational groups than on the other two tests. Very often skill in computation depends upon interest and liking for arithmetic. Skill in responding to number combinations should be automatic. Mental ability will exert an influence upon learning of number combinations.

The test on fundamentals contained all types of fundamentals, integers, fractions, decimal fractions and denominate numbers. The four processes, addition, subtraction, multiplication and division were used with each type of number.

Examples:

1. $\begin{array}{r} 4 \\ \underline{0} \end{array}$ 2. $\begin{array}{r} 15 \\ \underline{-\ 7} \end{array}$ 3. $\begin{array}{r} 321 \\ \underline{\times\ 2} \end{array}$ 4. 8 6152

5. $\begin{array}{r} 9 \\ \underline{1\ 4/5} \end{array}$ 6. $\begin{array}{r} 8\ 1/2 \\ \underline{-3\ 5/12} \end{array}$ 7. $8 \times 2\frac{3}{4}$ 8. $3\frac{3}{4}$ $\frac{3}{4}$

9. 8.7 20 .325 .05 10. 8.7 - .645

11. 5 X .3 12. 1.25 87.5 13. 25% of 16

14. $\begin{array}{r} 2 \text{ ft. } 4 \text{ in.} \\ 3 \text{ ft. } 8 \text{ in.} \\ \underline{4 \text{ ft. } 6 \text{ in.}} \end{array}$

There were several questions based on a bar graph and one concerning a scale drawing. There were sixty items in all on this test.

If we examine the scores made on the test we find the

professional, business, and skilled extend into the high interval of $13^{9} - 14^{1}$. There are no scores from the professional or clerical in the lowest interval. The largest percentages in the various intervals are professional 17.7% in 11^{8}-12, clerical, 15.4% in $10^{5} - 10^{9}$, business 18% in $11^{8} - 12$, skilled 15.5% in $10^{5} - 10^{9}$, semi-skilled 19.1% in $10^{5} - 10^{9}$, unskilled 23.3% in $10^{5} - 10^{9}$, and miscellaneous 17.8% in $10 - 10^{4}$. Notice how many of these lie in $10^{5} - 10^{9}$. To see the range of ~~percents~~ per cents for the various intervals, Graph 6 gives a picture which adds to the clearness of Table VII.

Chart 13 shows the median of each group compared with the other groups and with the range of each group. The median for each are professional 11^{10}, clerical 11^{7}, business 11^{8}, skilled 11^{1}, semi-skilled 10^{11}, unskilled 10^{5}, and miscellaneous 10^{9}.

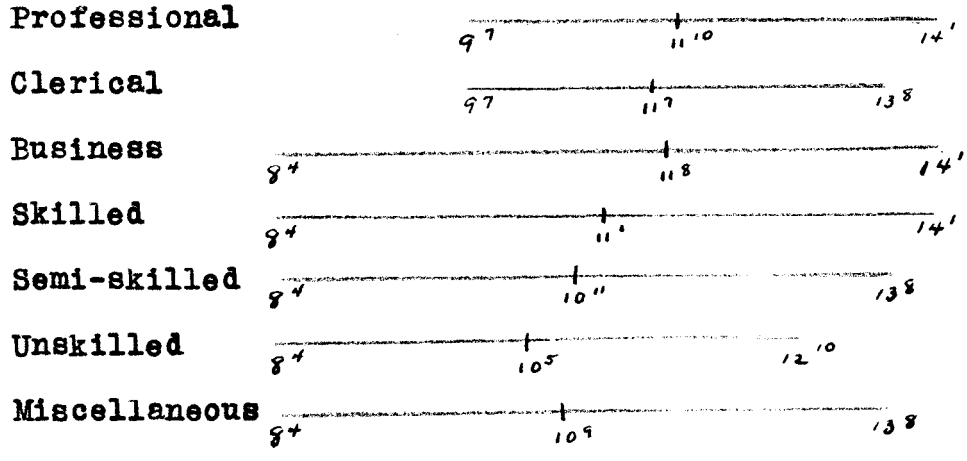
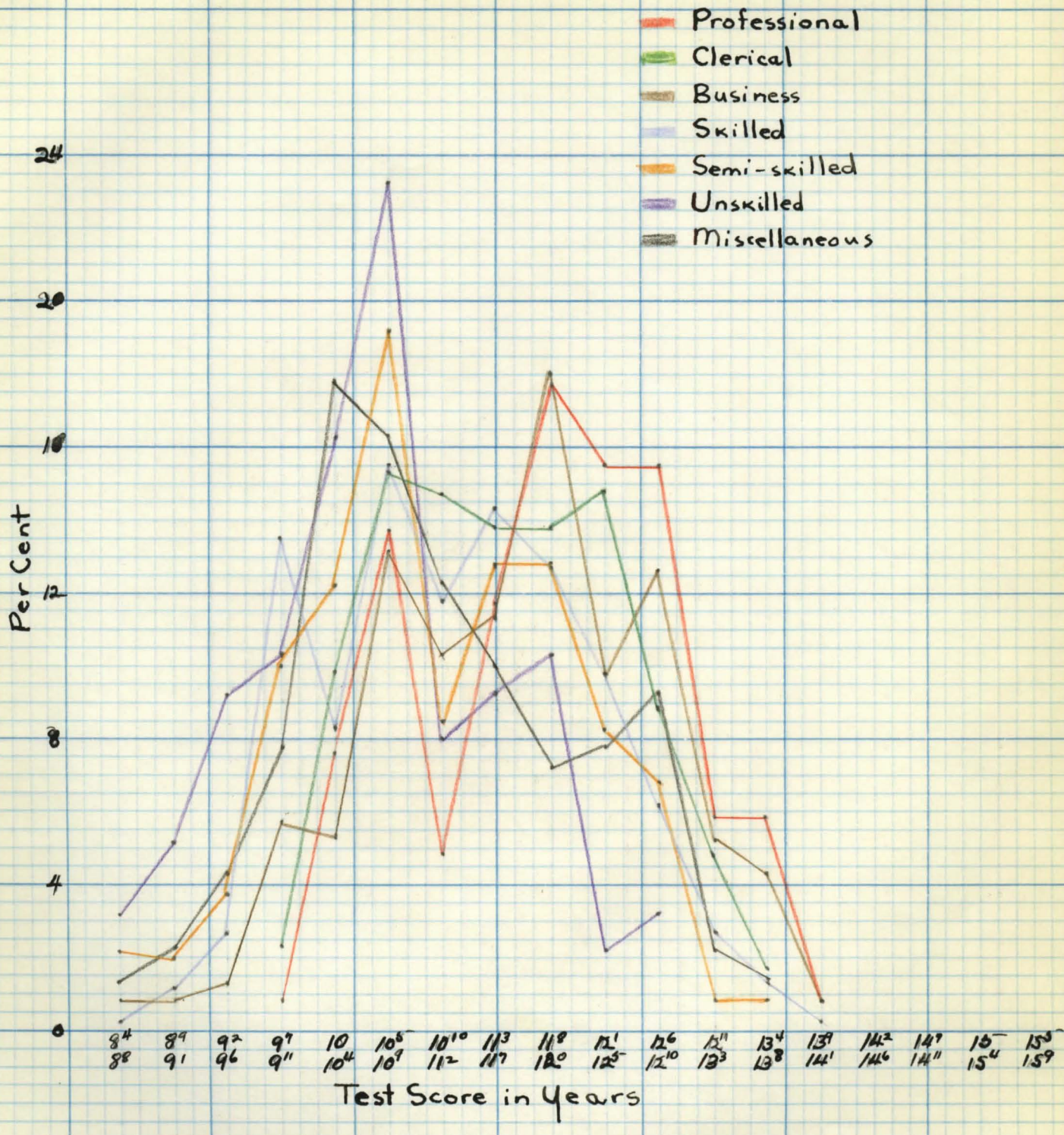


CHART 13. Range of Scores on Arithmetic Fundamental Test Made by Pupils Grouped by Parental Occupations. Median shown by Vertical Line

TABLE VII

Percentages of Pupils Grouped by Parental Occupation in Step Intervals of Six Months For Metropolitan Arithmetic Fundamental Test Scores

	Unskilled	Semi-Skilled	Skilled	Business	Clerical	Professional	Misc.
15 - 15^{4}							
14^{7} - 14^{11}							
14^{2} - 14^{6}							
13^{9} - 14^{1}			.2%	.9%		.9%	
13^{4} - 13^{8}		.9%	1.3%	4.4%	1.6%	5.8%	1.4%
12^{11} - 13^{3}		.9%	2.6%	5.1%	4.9%	5.8%	2.1%
12^{6} - 12^{10}	3.1%	6.9%	6.1%	12.6%	9.9%	15.5%	9.3%
12^{1} - 12^{5}	2.1%	8.2%	9.8%	9.8%	14.7%	15.5%	7.9%
11^{8} - 12	10.3%	12.9%	12.6%	18.0%	13.8%	17.7%	7.2%
11^{3} - 11^{7}	9.2%	12.9%	14.4%	11.4%	13.8%	11.7%	10.0%
10^{10} - 11^{2}	8.0%	8.5%	11.8%	10.4%	14.7%	4.8%	12.2%
10^{5} - 10^{9}	23.3%	19.1%	15.5%	13.2%	15.4%	13.7%	16.4%
10 - 10^{4}	16.3%	12.2%	8.3%	5.4%	9.8%	7.7%	17.8%
9^{7} - 9^{11}	10.3%	10.0%	13.5%	5.7%	2.4%	.9%	7.9%
9^{2} - 9^{6}	9.2%	3.8%	2.6%	1.3%			4.3%
8^{9} - 9^{1}	5.1%	1.5%	1.1%	.9%			2.1%
8^{4} - 8^{8}	3.1%	2.2%	.2%	.9%			1.4%



GRAPH 6

THE PER CENT IN 5-MONTH INTERVALS OF ARITHMETIC FUNDAMENTALS TEST SCORES GROUPED BY PARENTAL OCCUPATIONS OF THE PUPILS TESTED

TABLE VIII

Standard Deviation, Standard Deviation of Mean, Probable Error, Standard Deviation of Difference of Mean, and Standard Deviation of Difference of Scores of Pupils Grouped According to Parental Occupations on Metropolitan Arithmetic Fundamental Test

	S. D.	S.D.M.	P. E.	S.D.D.M.	S.D.D.
Professional	9.45	.92	.62	.99	
Clerical	11.20	.90	.67	1.05	
Business	14.35	.81	.55	.88	5.0
Skilled	12.40	.56	.38	.66	3.5
Semi-skilled	11.25	.63	.43	.72	3.6
Unskilled	11.15	1.11	.75	1.16	2.4
Miscellaneous	12.85	1.07	.72	1.13	
Total	13.35	.34	.23		

This shows that in arithmetic fundamentals the difference between the S.D.M. of the groups and the entire group was too small to be significant, but that the differences of the S.D. of the groups was large enough to be significant. That there is a difference in the achievement of children from various occupational groups in arithmetic fundamentals may be concluded from this. Children from professional and business men rank highest and those from unskilled parents lowest.

This should mean that these children have achieved more because of their higher average I.Q. The children were not

grouped according to homogeneous grouping before they were in the seventh grade. Since they are grouped homogeneously in the seventh grade, the pupil's work may be analyzed to tell where he needs special help. The handling of groups which need the same drill is more economical of the teacher's time and efforts than working with the individual member of a large class. Each pupil has the same opportunity for learning his number combinations, and does not need the background necessary for vocabulary or reading. Yet we find the children rank in the same order as they did on the other tests.

The fourth of the battery of tests was that of arithmetic problems. The ability to solve problems depends upon efficiency in reading, knowledge of the reading vocabulary peculiar to arithmetic, ability to determine the process to use, and an accurate knowledge of number combinations. Ability to solve problems is closely related to reasoning ability in general. That means that the ranking of scores on this test should be very close to that of the first three tests.

This test consisted of forty problems. After each problem was a box in which to write the answer. There was space enough in the margin to work the problem.

Examples.

1. Alice said she had 22 words right and 8 words wrong in her spelling test. How many words were in the test?

2. Each of the 78 fifth-grade pupils will go to the school picnic. It will cost 37¢ for each pupil. How much is that in all?

3. My bedroom is 12 feet by 16 feet. How much will it cost to scrape and varnish the floor at 12¢ a square foot?

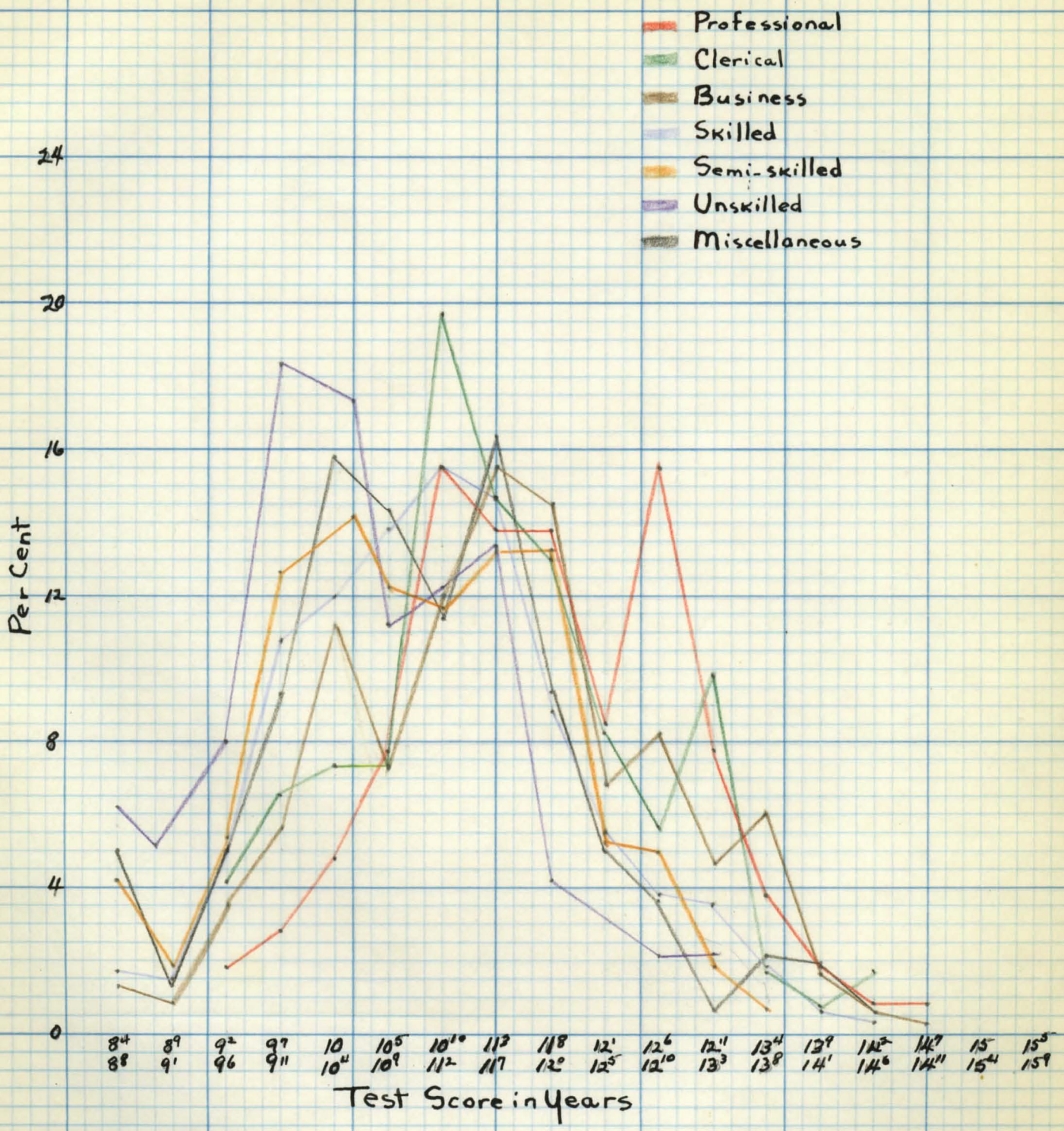
On this test we see that the professional and clerical groups have no members in the lowest interval. The highest interval contains .9% of the professional group and .3% of the business group. The largest percentages of each group are: professional, 15.5% in each of 10^{10} - 11^{2} and 12^{6} - 12^{10}; clerical, 19.6% in 10^{10} - 11^{2}; business, 15.5% in 11^{3} - 11^{7}; skilled, 15.5% in 10^{10} - 11^{2}; semi-skilled, 14.1% in 10-10^{4}; unskilled, 18.4% in 9^{7} - 9^{11}; and miscellaneous, 16.4% in 11^{3} - 11^{7}. The unskilled workmen's children do not have any scores in the top four intervals. Graph 7 gives a picture of these percentages.

Chart 14 shows the median of each group compared with the other groups and with the range of each. The medians are: professional, 11^{10}; clerical, 11^{4}; business, 11^{4}; skilled, 10^{11}; semi-skilled, 10^{9}; unskilled, 10^{4}; and miscellaneous, 10^{9}.

TABLE IX

Percentages of Children Grouped by Parental Occupation in Step Intervals of Six Months for Metropolitan Achievement Arithmetic Problem Test Scores

	Unskilled	Semi-skilled	Skilled	Business	Clerical	Professional	Misc.
15^{5} - 15^{10}							
15^{0} - 15^{4}				.3%		.9%	
14^{7} - 14^{11}			.4%	.6%	1.6%	.9%	
14^{2} - 14^{6}			1.1%	1.6%	.8%	1.9%	.7%
13^{9} - 14^{1}		.6%	1.7%	6.0%	1.6%	3.9%	2.1%
13^{4} - 13^{8}	2.1%	1.9%	3.5%	4.6%	9.8%	7.7%	.7%
12^{11} - 13^{3}	2.1%	5.0%	3.9%	8.2%	5.6%	15.5%	3.6%
12^{6} - 12^{10}		5.3%	5.5%	6.9%	8.2%	8.5%	5.0%
12^{1} - 12^{5}	4.1%	13.2%	8.8%	14.5%	13.0%	13.9%	9.3%
11^{8} - 12	13.4%	13.2%	14.6%	15.5%	14.6%	13.9%	16.4%
11^{3} - 11^{7}	12.1%	11.6%	15.5%	12.0%	19.6%	15.5%	11.4%
10^{0} - 11^{2}	11.2%	12.2%	13.9%	7.3%	7.3%	7.7%	14.3%
10^{5} - 10^{9}	17.4%	14.1%	12.0%	11.1%	7.3%	4.9%	15.8%
10 - 10^{4}	18.4%	12.6%	10.9%	5.7%	6.5%	2.9%	9.3%
9^{7} - 9^{11}	8.0%	5.3%	5.0%	3.5%	4.1%	1.9%	5.0%
9^{2} - 9^{6}	5.1%	1.9%	1.5%	.9%			1.4%
8^{9} - 9^{1}	6.1%	4.1%	1.7%	1.3%			5.0%



GRAPH 7

THE PER CENT IN 5-MONTH INTERVALS OF ARITHMETIC PROBLEM TEST SCORES GROUPED BY PARENTAL OCCUPATIONS OF THE PUPILS TESTED

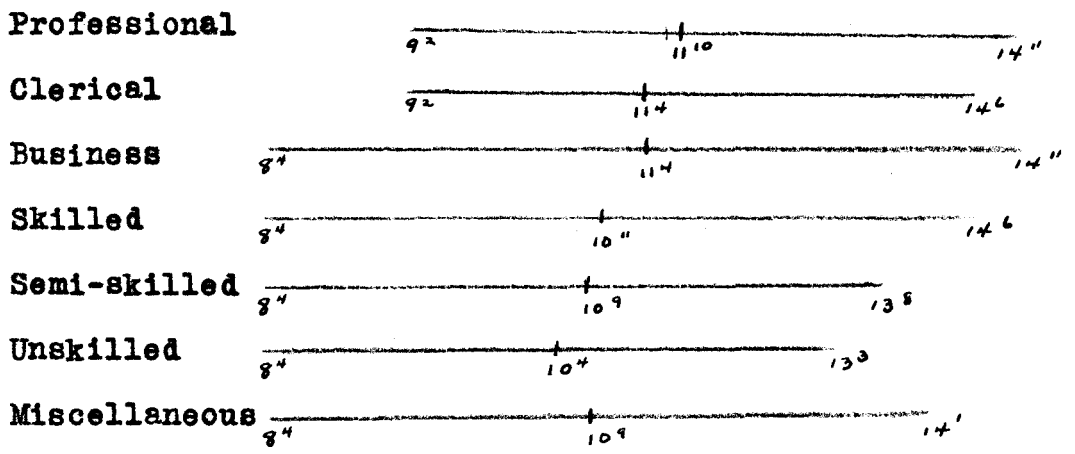


CHART 14. The Range of Scores of Pupils Grouped by Parental Occupations Made on an Arithmetic Problem Test with the Median Scores shown by the Vertical Lines

TABLE X

Standard Deviation, Standard Deviation of Mean, Probable Error, Standard Deviation of Deviation of Mean, Standard Deviation of Difference of Scores of Arithmetic Problem Test of Pupils Grouped by Parental Occupations

	S. D.	S.D.M.	P. E.	S.D.D.M.	S.D.D.
Professional	13.65	1.33	.90	1.38	
Clerical	14.20	1.25	.85	1.29	
Business	13.45	.76	.51	.82	.93
Skilled	13.15	.59	.40	.67	3.5
Semi-skilled	13.20	.75	.51	.81	.39
Unskilled	10.70	1.07	.72	1.11	3.4
Misc.	13.35	1.11	.75	1.15	
Entire Group	12.15	.31	.21		

Table X shows that the difference between the S.D.M. of the various groups and the entire group is not large enough to be significant. The difference in the S.D. between the professional, clerical, and business is not large enough to be significant. The difference between professional, skilled, and unskilled is large enough to be significant. The difference between the skilled, semi-skilled, and unskilled is large enough to be significant. We may conclude that there is not much difference in the achievement of children of professional, clerical, and business men on an arithmetic problem test. There is a significant difference between the children of these groups and those of semi-skilled and unskilled workmen.

These results are understandable in the light of those of the other tests. By examining carefully the results of the reading and arithmetic fundamentals test, one would expect to find the groups in the order named. The use of methods suggested by L. J. Brueckner, G. T. and John Buswell and E. L. Thorndike would tend to help improve both calculations and problem solving of the lower ranking groups.

The fifth test of the battery was one in English. This consisted of two parts (1) Language Usage, and (2) Punctuation and Capitalization. Language usage depends very often upon the language heard at home. It is much easier for a

pupil to use correct language when he hears it used every day around him than it is for a pupil who only hears correct language at school. In order to know what word belongs in the blank, this test also was influenced by reading ability. This test contained sixty-seven items. In language usage one word was omitted from the sentence. The word which would fit in to make the sentence correct and sensible was to be supplied in a parenthesis after the sentence.

Examples.

1. "Please l- me go," said the little boy (l-)
2. With w- was Sally playing when you saw her yesterday? (w-)
3. Ned is on the raft. See him jump _____ the raft into the water. ( )

The second part of the test contained sentences in which some punctuation marks and capital letters were left out. There was a parenthesis after each sentence in which to copy either the word after which the punctuation mark belongs and the punctuation mark or the word to be capitalized. Another part contained sentences in which the words were to be capitalized or punctuation marks inserted.

Examples.

1. Mary is a good girl she helps her mother. ( )
2. i gave Dick three marbles ( )

On this test we again find no children from professional or clerical workers in the lowest interval. In the highest interval 14^{7} - 14^{11} are .9% of the professional, 1.6% of the clerical, and .3% of the business. The largest ~~percents~~ of each group show 19.7% in 12^{1}-12^{5} of the professional, 20.2% of the clerical in 12^{6} - 12^{10}, 15.8% of the business in 12^{6} - 12^{10}, 18.2% of the skilled in 12^{1} - 12^{5}, 15.4% of the semi-skilled in 11^{8} - 12, 17.3% of the unskilled in 11^{8} - 12, and 15% of the miscellaneous in 12^{1} - 12^{5}. We again see the unskilled group does not extend into as high an interval as the others. Graph 8 shows the range and overlapping of these percentages.

Chart 15 shows the median of each group on the English test compared with the other medians and with the range of each group. The median scores are professional, 12^{9}; clerical, 12^{3}; business 12^{3}; skilled,11^{9}; semi-skilled,11^{8}; unskilled, 10^{11}; and miscellaneous, 10^{9}.

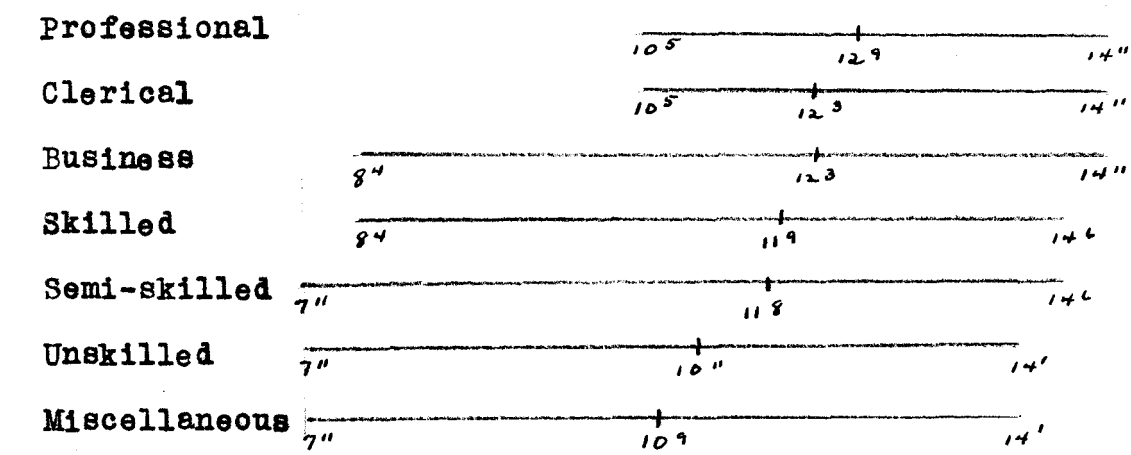
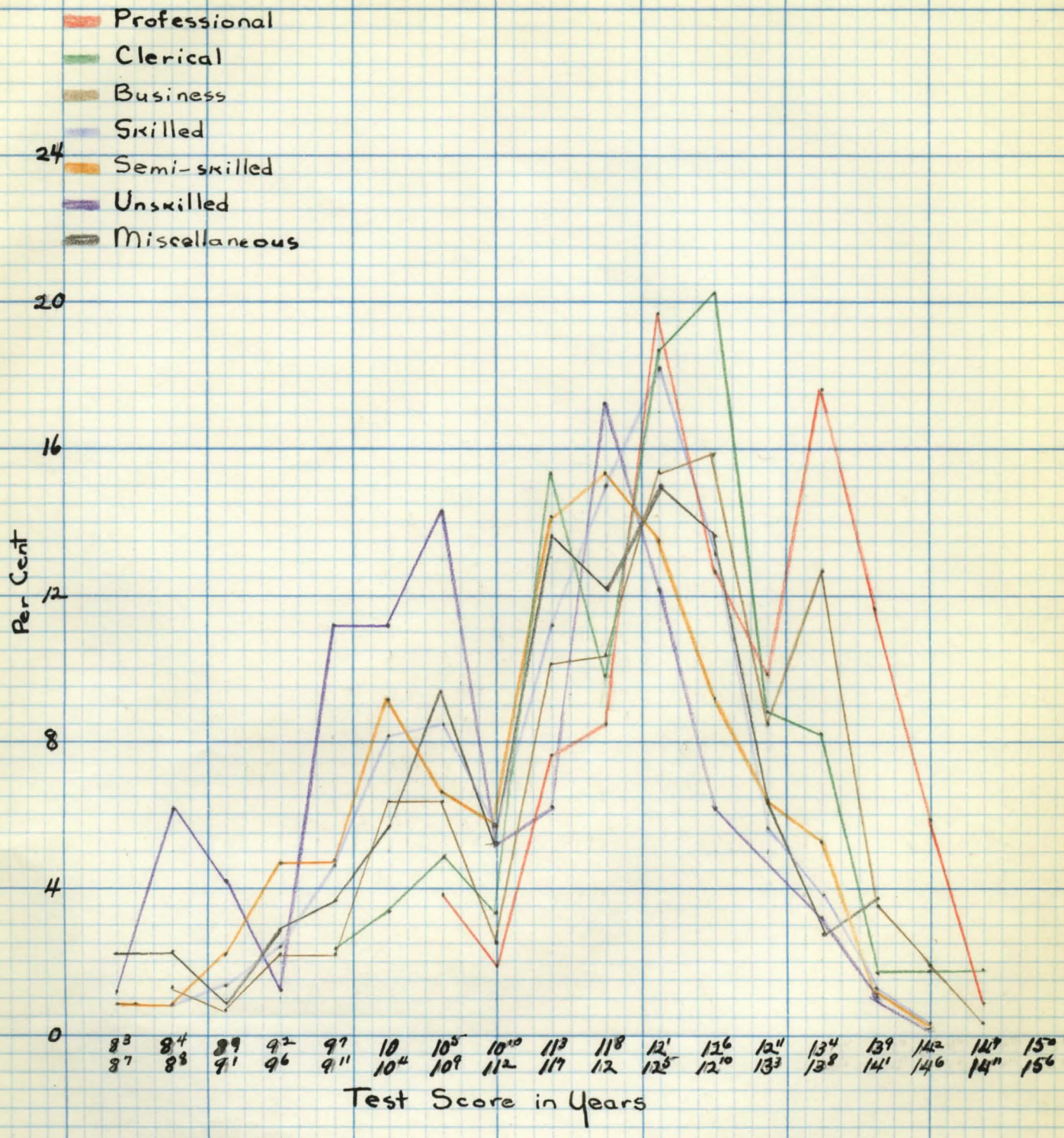


CHART 15. The Range of Scores of Pupils Grouped by Parental Occupations on a Metropolitan English test with the Vertical Lines showing the Median Scores

TABLE XI

Percentages of Children Grouped by Parental Occupation in Step Intervals of Six Months for Metropolitan Achievement English Test Scores

	Unskilled	Semi-skilled	Skilled	Business	Clerical	Professional	Misc.
$15 - 15^{4}$							
$14^{7} - 14^{11}$				.3%	1.6%	.9%	
$14^{2} - 14^{6}$		.3%	.4%	1.9%	1.6%	5.8%	
$13^{9} - 14^{1}$	1.1%	1.2%	1.3%	3.5%	1.6%	11.7%	3.6%
$13^{4} - 13^{8}$	3.1%	5.3%	3.7%	12.7%	8.3%	17.6%	2.8%
$12^{11} - 13^{3}$		6.3%	5.7%	8.5%	8.9%	9.8%	6.4%
$12^{6} - 12^{10}$	6.1%	9.1%	13.1%	15.8%	20.2%	12.6%	13.6%
$12^{1} - 12^{5}$	12.1%	13.5%	18.2%	15.4%	18.7%	19.7%	15.0%
$11^{8} - 12$	17.3%	15.4%	15.0%	10.4%	9.8%	8.5%	12.2%
$11^{3} - 11^{7}$	6.1%	14.1%	11.1%	10.1%	15.4%	7.6%	13.6%
$10^{10} - 11^{2}$	5.1%	5.7%	5.7%	2.5%	3.3%	1.9%	5.7%
$10^{5} - 10^{9}$	14.3%	6.6%	8.5%	6.3%	4.9%	3.9%	9.3%
$10 - 10^{4}$	11.2%	9.1%	8.1%	6.3%	3.3%		5.7%
$9^{7} - 9^{11}$	11.2%	4.7%	4.6%	2.2%	2.4%		3.6%
$9^{2} - 9^{6}$	1.1%	4.7%	2.4%	2.2%			2.9%
$8^{9} - 9^{1}$	4.1%	2.2%	1.3%	.6%			.7%
$8^{4} - 8^{8}$	6.1%	.9%					2.1%
$7^{9} - 8^{3}$	1.1%	.9%	.9%	1.3%			2.1%



GRAPH 8

THE PER CENT IN 5-MONTH INTERVALS OF ENGLISH TEST SCORES OF PUPILS GROUPED BY PARENTAL OCCUPATIONS

TABLE XII

Standard Deviation, Standard Deviation of Mean, Probable Error, Standard Deviation of Difference of Mean and Standard Deviation of Difference of English Test Scores of Pupils Grouped by Parental Occupations

	S. D.	S.D.M.	P. E.	S.D.D.M.	S.D.D.
Professional	12.25	1.18	.80	1.24	
Clerical	12.40	1.09	.73	1.16	
Business	15.60	.88	.60	.97	3.3
Skilled	12.95	.58	.39	.70	4.1
Semi-skilled	15.20	.82	.55	.91	2.7
Unskilled	16.35	1.63	1.10	1.67	3.3
Misc.	15.85	1.32	.90	1.38	
Entire Group	16.30	.40	.27		

This shows there is no significant difference between the medians of the group and the entire group. The difference between the S. D. of the groups is large enough to be significant. We may conclude that there is a significant difference between scores made by children of various parental occupations. The professional, business, and clerical rank highest, and the unskilled workmen rank lowest.

In improvement of English usage the remedial work will have to be done with individual children. The errors may be grouped according to types such as verb errors, adjective

and adverb errors, etc. Here again with the homogeneous grouping in the seventh grade, remedial instruction may be better carried on with the groups. More work would have to be done with the children from certain occupational groups than with children from other groups.

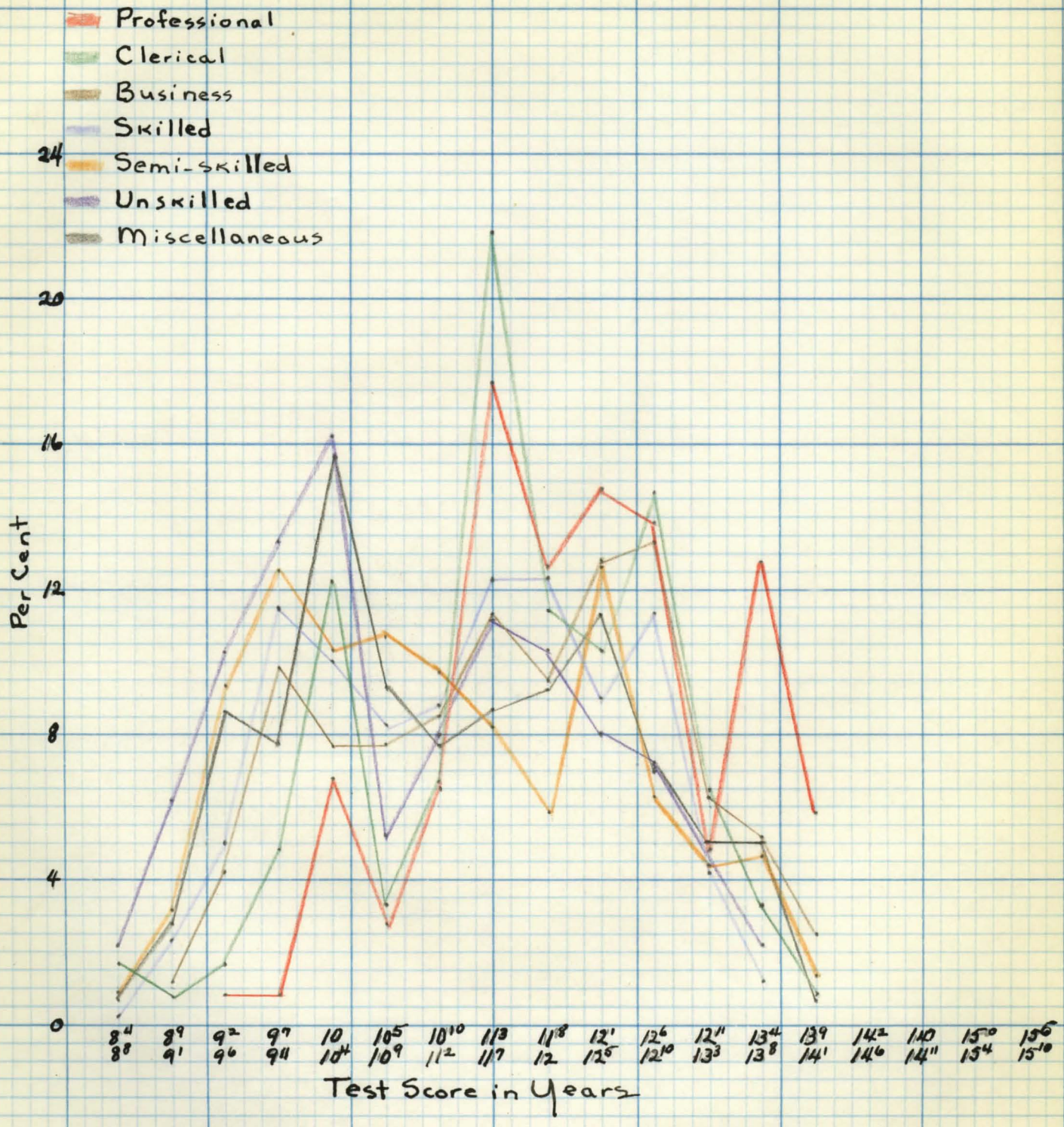
The last of the tests in this battery was a test on spelling. This consisted of fifty words which were selected on the basis of vocabulary frequency as indicative of their written use by pupils. The selection was checked against the contents of the better-known spelling texts. This test consisted of 50 blanks in which the word was to be written when called out by the teacher. Some of the words given were crumb, sense, necessary, quotation, and weather.

On the spelling test we see there are no scores from the professional or business groups in the lowest interval. All the groups extend into the same high interval with the exception of the unskilled labor. The largest percentages show 17.6% of the professional in 11^{3} - 11^{7}; 21.9% of the clerical in 11^{3} - 11^{7}; 13.4% of the business in 12^{6} - 12^{10}; 12.4% of the skilled in each of 11^{3} - 11^{7} and 11^{8} - 12; 12.7% of the semi-skilled in 12^{1} - 12^{5}; 16.2% of the unskilled in 10 - 10^{4} and 15.7% of the miscellaneous in 10 - 10^{4}. Graph 8 shows a better picture of this, perhaps, than Table XIII.

TABLE XIII

Percentages of Children Grouped by Parental Occupation in Step Intervals of Six Months for Metropolitan Achievement Spelling Test Scores

	Unskilled	Semi-Skilled	Skilled	Business	Clerical	Professional	Misc.
$15 - 15^{5}$							
$14^{7} - 15^{1}$							
$14^{2} - 14^{6}$							
$13^{9} - 14^{1}$		1.3%	1.1%	2.5%	.8%	5.9%	.7%
$13^{4} - 13^{8}$	2.1%	4.6%	3.3%	5.1%	3.3%	12.6%	5.0%
$12^{11} - 13^{3}$		4.4%	4.1%	6.4%	6.5%	4.9%	5.0%
$12^{6} - 12^{10}$	7.2%	6.3%	11.4%	13.4%	14.6%	13.8%	7.1%
$12^{1} - 12^{5}$	8.0%	12.7%	9.0%	12.9%	10.6%	14.7%	11.4%
$11^{8} - 12$	10.3%	5.9%	12.4%	9.5%	11.4%	12.6%	9.3%
$11^{3} - 11^{7}$	11.2%	8.2%	12.4%	11.4%	21.9%	17.6%	8.6%
$10^{10} - 11^{2}$	8.0%	9.7%	8.9%	8.5%	6.5%	6.8%	7.9%
$10^{5} - 10^{9}$	5.1%	10.6%	8.3%	7.6%	3.3%	2.9%	9.3%
$10 - 10^{4}$	16.2%	10.4%	10.0%	7.6%	12.2%	6.8%	15.7%
$9^{7} - 9^{11}$	13.4%	12.5%	11.5%	9.8%	4.9%	.9%	7.9%
$9^{2} - 9^{6}$	10.3%	9.4%	5.0%	4.1%	1.6%	.9%	8.6%
$8^{9} - 9^{1}$	6.1%	3.1%	2.4%	1.2%	.8%		2.9%
$8^{4} - 8^{8}$	2.1%	.9%	.2%		1.6%		.7%



GRAPH 9

THE PER CENT IN 5-MONTH INTERVALS OF SPELLING TEST SCORES OF PUPILS GROUPED BY PARENTAL OCCUPATIONS

Chart 16 shows the median of each group compared with the others and with the range of each group. The medians for each are: professional, 12^{1}; clerical, 11^{7}; business, 11^{7}; skilled, 11^{4}; semi-skilled, 11^{0}; unskilled, 10^{9}; and miscellaneous, 10^{11}.

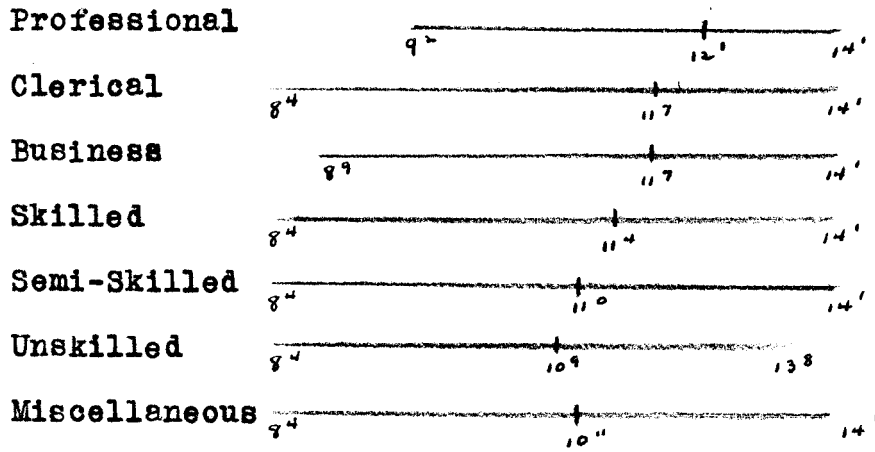


CHART 16. The Range of Scores of Pupils Grouped by Parental Occupations on the Metropolitan Spelling Test with the Vertical Lines Showing the Median Scores.

TABLE XIV

Standard Deviation, Standard Deviation of Mean, Probable Error, Standard Deviation of Difference of Mean and Standard Deviation of Difference of Scores of Pupils Grouped According to Parental Occupations on the Metropolitan Spelling Test

	S. D.	S. D. M.	P. E.	S.D.D.M.	S.D.D.
Professional	12.80	1.25	.84	1.31	
Clerical	13.60	1.32	.89	1.38	
Business	15.10	.85	.57	.94	2.4
Skilled	14.60	.65	.49	.71	2.3
Semi-skilled	15.90	.90	.56	.98	3.3
Unskilled	15.15	1.51	1.01	1.56	2.8
Misc.	15.55	1.29	.87	1.35	
Entire Group	15.30	.39	.27		

We may conclude that on the spelling test the difference between the S.D.M. of the various groups and the entire group is too small to be significant. The difference between the S.D. of the groups is large enough to be significant. There is a difference in the achievement of children from various occupational groups in spelling. The professional, clerical, and business rank highest. The group from unskilled labor ranks lowest.

The results of all these tests show there is a difference in achievement of children grouped according to parents'

occupations. Each test yielded the same conclusion. Children from professional, clerical, or business men do not differ greatly in achievement. There is a significant difference between them and children of skilled and semi-skilled workmen. Children of unskilled workmen rank lowest.

In order to find whether there is a difference in achievement between boys and girls, I selected those from the professional, skilled, and unskilled parents. These children would yield a large enough number to feel sure of accuracy of results and would give a variation of achievement found in the previous results. I grouped together the boys and then the girls. I found from this the percent of each group which were below an achievement age of twelve and those who were above twelve. This is shown in Tables XV and XVI. The same total is not always found because some of the children made too low a score to be counted on one or more of the six tests.

TABLE XV

The Achievement of Boys of Professional, Skilled, and Unskilled Groups on the Six Parts of the Metropolitan Achievement Test

BOYS	Achievement Under Twelve					
	Rd.	Voc.	A.F.	A.P.	Eng.	Sp.
Professional	17	14	23	24	10	23
Skilled	175	160	171	177	155	171
Unskilled	46	45	44	37	40	42
Total	238	219	238	238	205	236
Percent	74.2	66.2	75	75	63	72.4

TABLE XV (Cont.)

BOYS	Achievement Over Twelve					
	Rd.	Voc.	A.F.	A.P.	Eng.	Sp.
Professional	33	36	27	26	40	27
Skilled	49	74	49	48	74	57
Unskilled	1	2	3	5	7	5
Total	83	112	79	79	121	89
Percent	25.8	33.8	25	25	37	27

TABLE XVI

The Achievement of Girls of Professional, Skilled, and Unskilled Groups on Six Parts of the Metropolitan Achievement Test

GIRLS	Achievement Under Twelve					
	Rd.	Voc.	A.F.	A.P.	Eng.	Sp.
Professional	21	16	30	34	10	24
Skilled	179	157	171	189	106	137
Unskilled	48	45	45	48	32	38
Total	248	218	246	271	148	199
Percent	75.1	65.5	75.5	83	45.5	61.4
	Achievement Over Twelve					
	Rd.	Voc.	A.F.	A.P.	Eng.	Sp.
Professional	31	36	22	18	42	28
Skilled	46	72	50	36	116	92
Unskilled	2	7	7	1	20	14
Total	79	115	79	56	178	134
Percent	24.9	34.5	24.5	17	55.5	38.6

Tables XV and XVI show there is practically no difference in achievement of boys and girls on tests in Reading, Vocabulary, and Arithmetic Fundamentals. In Arithmetic Problems the boys rank slightly higher. In English and Spelling the girls rank higher. The girls rank relatively higher in English and Spelling than the boys do on the Arithmetic Problems. This selection of pupils included 660 boys and girls. Heilman had found that girls excel in Spelling. This corroborates his finding, but this study shows their excelling in English, too. Their difference in Arithmetic Problems is not great enough to be significant.

Summary

1. There is a difference in achievement of pupils who are classified according to their fathers' occupation.

2. There is very little difference in the medians of the children of the professional, clerical, and business men as shown by certain tests.

3. On each of a test in Reading, Vocabulary, Arithmetic Fundamentals, Arithmetic Problems, English, and Spelling, the children of the professional group rank highest.

4. The ranking of the groups are (1) professional, (2) clerical and business, (3) skilled, (4) semi-skilled, and (5) unskilled on each of the tests given.

5. There is wide overlapping among the scores of the different groups.

6. When the scores are given in terms of years and months the median scores on the six parts of Metropolitan Achievement Test are:

	Reading	Voc.	Arith.F.	Arith.P.	Eng.	Sp.
(1) Professional	12^{8}	12^{10}	11^{10}	11^{10}	12^{9}	12^{1}
(2) Clerical	11^{7}	12^{0}	11^{7}	11^{4}	12^{3}	11^{7}
(3) Business	11^{5}	12^{1}	11^{8}	11^{4}	12^{3}	11^{7}
(4) Skilled	10^{9}	11^{4}	11^{1}	10^{11}	11^{9}	11^{4}
(5) Semi-Skilled	10^{8}	11^{1}	10^{11}	10^{9}	11^{8}	11^{0}
(6) Unskilled	10^{3}	10^{9}	10^{5}	10^{4}	10^{11}	10^{9}
(7) Miscellaneous	10^{9}	11^{3}	10^{9}	10^{9}	10^{9}	10^{11}

7. There is no difference between boys and girls on a test of Reading, Vocabulary, and Arithmetic Fundamentals.

8. Boys ranked slightly higher than girls on a test of Arithmetic Problems.

9. Girls ranked higher than boys in English and Spelling.

Chapter IV

OTHER RELATED FINDINGS IN THE CLASS ANALYSIS

Chapter IV

OTHER RELATED FINDINGS IN THE CLASS ANALYSIS

I think it would not be wise to leave a study of this nature without revealing a few of the other facts which were brought to light during the analysis of the class. One of the very interesting discoveries was the great number of parents engaged in some of the occupations. All of these parents were not considered in Chapters II and III because their children had not been given both the intelligence and achievement tests. In these chapters only 1,560 of the total, 1,712 were used because of the lack of complete data for the remainder. The lack of data was a result of absence from one or both of the tests, or attendance in a parochial school or a school outside the city at the time of the testing. From the entire group the following occupations were followed by the largest numbers of parents.

Occupation	Number of Parents	Percent
1. Laborers	231	13.5%
2. Clerks	119	7.0%
3. Salesmen	104	6.1%
4. Railroad Workers	75	4.4%
5. Housewives	74	4.3%
6. Merchants	73	4.4%

7.	Mechanics	71	4.1%
8.	Managers	67	3.9%
9.	Carpenters	67	3.9%
10.	Truck drivers	55	3.2%
11.	Painters	47	2.8%
12.	Other occupations	729	42.5%
	Total	1712	100.0%

There were forty-two children who entered the Seven B grade of the Louisville Public Schools from some smaller town in Kentucky during September, 1937. Their parent's occupations and the number engaged in each were:

1.	Policeman	(2)	12.	Insurance	(1)
2.	Molder	(1)	13.	Radio mechanic	(1)
3.	Clerk	(3)	14.	Paper hanger	(1)
4.	Boiler-maker	(1)	15.	Foreman	(2)
5.	Cab driver	(1)	16.	Plumber	(2)
6.	Cook	(1)	17.	Carpenter	(4)
7.	Laborer	(8)	18.	Painter	(1)
8.	Printer	(1)	19.	Roofer	(1)
9.	Minister	(2)	20.	Nurse	(1)
10.	Salesman	(3)	21.	Seamstress	(1)
11.	Manager	(1)	22.	Railroad man	(3)

There were twenty-seven children who entered from parochial schools inside the city. Their parents were engaged in the following occupations.

1. Railroad worker	(3)	9. Auditor	(1)
2. Truck driver	(2)	10. Pedler	(1)
3. Buffer	(1)	11. Florist	(1)
4. Laborer	(4)	12. Manager	(1)
5. Bookkeeper	(2)	13. Enameler	(1)
6. Salesman	(1)	14. Electrician	(1)
7. Mechanic	(4)	15. Furniture repair	(2)
8. Carpenter	(1)	16. No occupation	(1)

There were thirty children from schools outside the state. Their parents were engaged in the following occupations.

1. Kitchen employee	(1)	9. Bookkeeper	(1)
2. Rooming house	(1)	10. Salesman	(8)
3. Maid	(2)	11. Foreman	(2)
4. Laborer	(5)	12. Baker	(1)
5. Dentist mechanic	(1)	13. Restaurant owner	(1)
6. Engineer	(1)	14. Insurance	(2)
7. Merchant	(1)	15. Paper hanger	(1)
8. Clerk	(1)	16. Bricklayer	(1)

These children from other states came from thirteen states. The states they came from were:

1. Ohio (3)
2. Arkansas (1)
3. Illinois (3)
4. Wisconsin(2)
5. Tennessee(7)
6. Louisiana(1)
7. Florida (1)
8. Alabama (2)
9. Indiana (5)
10. Georgia (1)
11. Texas (1)
12. Michigan (1)
13. West Virginia (1)

The largest numbers were from Tennessee and Indiana. These are Kentucky's border states. The total of all the children entering the schools in Louisville for the first time in the 7 B yield very few from professional, clerical, or business groups. The majority are from the skilled, semi-skilled, and unskilled groups.

Collecting and classifying these occupations with those used in Chapters II and III, there are 102 occupations altogether. The following table gives the different occupations and the number engaged in each.

TABLE XVII

The Occupations of the Parents of the 7 B Boys and Girls of Louisville in September 1937

1. architect	5	25. elevator man	1
2. banker	19	26. engineer	32
3. baker	10	27. enamel maker	4
4. barber	14	28. farmer	1
5. bookkeeper	10	29. fireman	18
6. beauty operator	1	30. finisher	7
7. blacksmith	8	31. foreman	29
8. bricklayer	10	32. gas worker	11
9. butcher	7	33. grocer	16
10. cabinet maker	5	34. gardener	2
11. carpenter	67	35. gunsmith	1
12. clerk	119	36. horseman	2
13. chemist	1	37. housewife	74
14. cook	5	38. insurance	26
15. coppersmith	1	39. inspector	15
16. chauffeur	7	40. janitor	24
17. contractor	13	41. lawyer	8
18. collector	1	42. lumberman	9
19. dentist	3	43. laundryman	6
20. designer	1	44. judge	1
21. distiller	9	45. laborer	231
22. doctor	7	46. brass & iron workers	43
23. druggist	5	47. cotton mill workers	9
24. electrician	18	48. manager	67

49. merchant	73	77. r.r.motor man	16
50. mechanic	71	78. r.r.conductor	6
51. mail carrier	8	79. yardmaster	2
52. milk salesmen	7	80. other R.R.workers	51
53. minister	8	81. seamstress	7
54. newspaperman	8	82. salesman	104
55. nurse	1	83. stenographer	7
56. orphan	10	84. retired	7
57. optician	2	85. teacher	13
58. painter	47	86. tile setter	5
59. paper hanger	19	87. timekeeper	2
60. poultry grader	2	88. tailor	4
61. pedler	12	89. telephone repair	5
62. photographer	1	90. steamboat	3
63. plumber	17	91. sander	7
64. policeman	13	92. truck driver	55
65. plasterer	3	93. wood worker	7
66. printer	16	94. watchmaker	1
67. pipe fitter	9	95. restaurant owner	13
68. real estate	7	96. watchman	19
69. refrigerator repair	2	97. theatre owner	1
70. roofer	1	98. W.P.A.	10
71. railroad baggageman	1	99. Unemployed	40
72. flagman	4	100. city worker	9
73. r.r. clerk	8	101. pensioned	1
74. r.r. brakeman	2	102. waiter	5
75. r.r.switchman	12		
76. r.r.freight agent	2		

The last census taken of numbers engaged in various occupations was in 1930. In this all occupations were grouped under ten headings. They were agriculture, forestry and fishing, extraction of minerals, manufacturing and mechanical industries, transportation and communication, trade, public service, professions, domestic and personal service, and clerical occupations. I did not follow this classification for two reasons. First, this did not make enough distinction between skilled, semi-skilled, and unskilled workmen. For example, under manufacturing were included paper hangers, managers and officials, plumbers, jewelers, engineers, stonecutters, and apprentices to blacksmiths and plumbers. Second, if I wanted to make comparisons with other studies I felt I would need a classification similar to the ones used in the studies. All the studies of intelligence and parental occupation followed Taussig's classification.

From the census of Louisville in 1930 I found there were the following percentages of gainfully employed males ten years and over:

1. Agriculture .7%
2. Forestry and Fishing
3. Extraction of Minerals .2%

4.	Manufacturing and Mechanical industries	42.3%
5.	Transportation and Communication	12.9%
6.	Trade	19.5%
7.	Public Service	2.8%
8.	Professions	5.4%
9.	Domestic and Personal Service	7.2%
10.	Clerical occupations	8.9%

I did not compare the percentages of my groups with these because (1) mine were not grouped in this manner, and (2) this included all males ten years and over and my figures included only the parents of children in the Seven B grade.

Summary

1. The occupations in which the greatest number of parents were engaged were clerks, salesmen, laborers, railroad workers, merchants, mechanics, managers, carpenters, truck drivers, painters, and housewives.

2. There were forty-two children who entered the Louisville Public Schools in the 7 B grade from smaller towns in Kentucky. Their parents were engaged in twenty-two occupations.

3. There were thirty children from schools outside the state. Their parents followed sixteen different occupations.

4. There were twenty-seven children from parochial schools inside the city. Their parents followed sixteen different occupations.

5. The entire group of 1,712 boys and girls were grouped according to 102 parental occupations.

Chapter V

SUMMARY AND RECOMMENDATIONS

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The previous chapters show that a study of the 7 B grade of September, 1937, of the junior high schools of Louisville reveals a difference in intelligence in the average of children from various parental occupational groups. This difference is based upon the results of the Otis Self-Administering Test of Mental Ability for the Intermediate Grades. This same test has been used in similar studies. Before giving my conclusions I would like to point out that it is a valid and reliable test. There is no direct method of finding the true validity of a test. The method of standardization is perhaps the best assurance. There have been 120,000 pupils used to establish the normal curve for the Otis Tests. The coefficient of correlation between the Higher Examination and the Advanced Examination is .889 for 180 cases in grades seven to twelve. The average of four coefficients of correlation between the Higher and Intermediate Examinations, averaging about 100 cases each in groups covering Grades Seven to Nine, is .842. The reliability coefficient is .95. Conclusions based on such a test should be worthy of consideration. However, if only a small number of children from various parental occupational groups were tested we could not say the conclusions would be true of occupational groups in general. The 1560

children tested for this study is a sufficiently large number to present a typical picture of the groups. The number of cases from each group were professional 102, clerical 123, business 317, skilled 459, semi-skilled 319, unskilled 98, and miscellaneous 140.

The test showed a wide overlapping in intelligence of the children from the different groups. When the groups are ranked according to Taussig's scheme of classification, (1) professional, (2) clerical, (3) business, (4) skilled, (5) semi-skilled, (6) unskilled, the average of the I.Q.'s of each group fall in the order just named. There is not a great difference between the clerical and business groups. There is a great difference between these and the skilled, semi-skilled, and unskilled groups. The average I.Q. for each group is: professional, 111.3; clerical, 109.2; business, 99.8; skilled, 96.2; semi-skilled, 95.0; unskilled, 85.0.

When the I.Q.'s of the children in each occupational group were ranked from high to low and tabulated in step intervals of six, we find that there were children in the top interval 133-138 from the professional, clerical, business and skilled groups. None of the children in this study were above 140 I.Q. This is unusual for an entire junior high class, for in my observations of one of the schools I have noticed there is generally one or more children above 140 I.Q.

The children who had the highest I.Q.'s were from the professional and business classes. This is in agreement with previous studies of American Men of Science and Letters, British Men and Women of Genius, and studies of gifted children. Leta Hollingsworth points out that all the gifted children attending the Speyer school of New York are from professional or business parents. Terman shows that very rarely indeed are gifted children from semi-skilled or unskilled parents. In my study none of the children from the professional or clerical group fell into the lowest four step-intervals. None of the children from the unskilled were in the four highest intervals. Terman's classification of I.Q. states that children from 90-110 are average and those above this are above average. The ~~percent~~ per cent from each group having I.Q. above 90 was: professional, 97.2%; clerical, 90.3%; business, 80.1%; skilled, 67.1%; semi-skilled, 59%; and unskilled 40.8%. There are over two and one-fourth times as many children from the professional class as from the unskilled. The business class has twice as many as the unskilled.

Other studies of the intelligence of elementary school children classified according to parents occupations reveal that those from professional families rank highest and unskilled workers lowest. The three largest such surveys are those of Haggerty and Nash, Dexter, and Collins. Book's study

of high school seniors bears the same conclusions. Even when the men themselves, and not the parents, were studied, as was done in the army tests, the ranking was the same.

When the boys and girls with I.Q. above 90 are considered separately, the percents derived show that there is not enough difference in native intelligence to be valid. From each group we find:

Group	Percent boys	Percent girls
Professional	48.6%	50.5%
Clerical	42.1%	46.2%
Business	32.1%	40.5%
Skilled	31.2%	36.1%
Semi-skilled	26.7%	32.3%
Unskilled	14.3%	26.6%
Miscellaneous	32.2%	31.4%

Thorndike, Lincoln, Pressey, and others have agreed that differences in general intelligence, if they do exist, are not great enough to be important. The conclusion from the children of this study is the same as theirs.

These same children were placed in the same parental occupational groups as was done for the intelligence test and the results of an achievement test was tabulated. This test was the Metropolitan Achievement Test. The Metropolitan

authors have provided norms based originally upon more than 6,000 cases from various cities. Extensive use of the tests seems to indicate that the present standards are entirely acceptable. The coefficient of reliability for the entire battery is .923. The test is objective through three devices used, the types of questions, the directions for scoring, and the scoring keys. The test is divided into six major parts, reading, vocabulary, arithmetic fundamentals, arithmetic problems, English, and spelling.

In this study I have treated each of the parts as a separate test. I have based my conclusions on each part individually. Yet, I have found the same truth on all the tests. Children from professional families ranked highest and those from unskilled lowest. In reading, the clerical were higher than the business; in vocabulary and arithmetic fundamentals, the business were higher than the clerical, and in arithmetic problems, English, and spelling the medians of the groups were the same. These two groups, perhaps, could have been grouped as one. The ranking of the other groups was the same on all tests; fourth, the skilled; fifth, the semi-skilled; and sixth, the unskilled.

TABLE XVIII

The Median Scores of Pupils Grouped by Parental Occupations on Each Part of the Metropolitan Achievement Test

Group	Reading	Vocab.	A.F.	A.P.	English	Spelling
Professional	12^{8}	12^{10}	11^{10}	11^{10}	12^{9}	12^{1}
Clerical	11^{7}	12^{0}	11^{7}	11^{4}	12^{3}	11^{7}
Business	11^{5}	12^{1}	11^{8}	11^{4}	12^{3}	11^{7}
Skilled	10^{9}	11^{4}	11^{1}	10^{11}	11^{9}	11^{4}
Semi-skilled	10^{8}	11^{1}	10^{11}	10^{9}	11^{8}	11^{0}
Unskilled	10^{3}	10^{9}	10^{5}	10^{4}	10^{11}	10^{9}
Miscellaneous	10^{9}	11^{3}	10^{9}	10^{9}	10^{9}	10^{11}

The difference of the standard deviations of these groups is large enough to be significant.

There is wide overlapping between the groups on each of the tests. When the scores of each group were ranked from high to low and the frequencies found for step intervals of five, the unskilled group did not extend into the top interval on any of the six tests. The total percentages of the professional, clerical, business, and skilled groups were much higher in the upper intervals than those of the unskilled groups.

In order to see if I could find any significant difference between the achievement of boys and girls on any of the tests I grouped separately the boys and the girls from the

professional, skilled, and unskilled groups. I felt these would be typical of the total group and would provide a large enough number to be worthy of consideration. There were 660 in the three groups. I divided the boys and the girls into two sub-groups - those having a test score above twelve years and those below. Doing this gives the following percentages:

	Boys	Girls	Boys	Girls
Reading	74.2%	75.1%	25.8%	24.9%
Vocabulary	66.2%	65.5%	33.8%	34.5%
Arith. Fund.	75 %	75.5%	25 %	24.5%
Arith. Prob.	75 %	83 %	25 %	17 %
English	63 %	45.5%	37 %	55.5%
Spelling	72.4%	61.4%	27.6%	38.6%

It may be observed that the boys were better in arithmetic problems, and the girls better in English and spelling. There is not enough difference in the arithmetic problems to be significant, but there is a significant difference in English and spelling. Heilman, in his study, found girls were superior in spelling.

From this study which included 102 occupations we see that there is a significant difference in median intelligence and achievement of children from various parental occupations. Different types of industrial communities should have different

curricula if the work is to be of value to the child. "In other words, but little more than one-fourth of the children of miners, masons, stoneworkers, laborers, farmers, bakers, and blacksmiths appear to be as able to profit by the work of the elementary school as that school is now organized as are three-fourths of the children of druggists, brokers, officials, insurance men, lawyers, teachers, office workers, doctors, dentists, accountants, bankers, and merchants."[1]

"This is not the place to enter a detailed discussion of the educational provisions which the data here presented imply except to note that an adequate educational program should neither obscure nor ignore such differences as are here brought to light. It is shown that success in intelligence tests argues liklihood of success in traditional high schools and elementary school curricula; it is here shown that such success in intelligence tests is directly related to the occupation of the fathers. It would seem to follow that the occupation of the parent has a direct relation to probable success of children in American public schools. Children of the professional class can master current curricula with emphasis on conceptual knowledge; children of the artisan class are much less likely to succeed. That the latter are

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1. Haggerty and Nash, "Mental Capacity of Children and Paternal Occupation", Journal of Educational Psychology, Vol. 15, pp. 563-564

entitled to a modification of present educational procedures designed to facilitate progress through school is a possible inference from the data."[1]

These tests have shown that the children have achieved in a ranking similar to their ability to achieve. The medians of those tests which are closely related, reading, vocabulary, and English, are very nearly the same for the various groups on each test. Several of the groups rank better on vocabulary and English tests than they do on the reading test. The medians on the arithmetic fundamental and arithmetic problem tests are nearly the same for each group on the two tests. The medians on these tests is much closer to the median on the reading test for the lower ranking groups than it is for the upper ranking groups.

In the seventh grade in Louisville there is homogeneous grouping. This is done on the basis of I.Q. and past achievement. This plan of classification puts a premium on attitudes, habits, and abilities. Here one finds pupils who need work of the same type. An achievement test such as the one administered will serve as a guide for remedial instruction. In each class there will be a need for both group and individual instruction, but an achievement test will show which pupils

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1. Haggerty and Nash, op. cit. p.571

progress at about the same pace. In several of the nine junior high schools we find a majority of children from professional, clerical, and business groups and a fewer number from the semi-skilled and unskilled groups. Other schools have a majority from the skilled and semi-skilled groups. If the teacher knows the past achievement of the child, his I.Q., and his parent's occupation, she can be more fully prepared to give him instruction than she would be without such knowledge . Different schools in a city as large as Louisville represent almost entirely different communities.

Since the achievement of a child in his school work depends largely upon his ability to read, the failure to grasp the subject matter may be traced directly to his failure to comprehend what he has read. Similarly, his reading ability depends to a great extent upon his informational and experience background. Therefore, it becomes the duty of the teacher to study carefully such background as the child may have. From this information, all of her work should be planned. Her first task after obtaining, classifying, and studying this information is to begin with the student just as he comes to her; from the knowledge that the child possesses already she should develop a curriculum that will expand and grow. It will not suffice for her to present material which is entirely new to the child in her endeavor to enlarge his cultural background; the process must be a gradual one. For example, if

she learns that the child is fond of music, the radio may be used as a core subject. If he is interested in airplanes, his work may be built around modes of transportation and travel. By increasing his knowledge and interest in a particular subject or field, it will soon become comparatively simple for her to present entirely new materials which will add materially to the child's informational background. Individual attention, therefore, must be given to the child who has failed to achieve because of his poor reading ability.

This sounds simple, and if the teacher tries to utilize every source available it will not be so difficult as may be supposed. The trouble, however, lies chiefly in the fact that since teachers come chiefly from homes far superior in every respect to those who have failed to achieve because of their poor background, it is often almost impossible for them to realize the circumstances under which "the other half" lives. Thus it becomes increasingly important for her to make the initial analysis of the individual child. A personal visit to the home or a lengthy conference with the visiting teacher or the attendance officer will help in this.

It is not enough for a teacher to be well trained, to have a cultural background, or to have mastered numerous courses in the methods of teaching. She must first of all be

versatile. Not only must she be able to identify and classify the child's difficulties, but she must be ready to rise to meet the situation. She must understand various phases of contemporary American life in order to assist her pupil. If she discovers, as she should, her own deficiencies, it immediately becomes her responsibility to remedy these. For example, if a teacher teaches in a community composed largely of factory workers, a thorough knowledge of such an industry and the manner of living of the employees will assist her greatly in her efforts to provide suitable work for the child. If the teacher is in a school where the greater number of children are from homes whose parents are day laborers, ditch diggers, etc., she must familiarize herself with a mode of life entirely new to her. The occupation of the parent gives a helpful picture of the background of the child. The teacher must know this in order to present a subject from which she may gradually approach new and richer living experiences of the child.

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